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ORIGINAL LECTURE.

THE CHEMISTRY AND THERAPEUTICS OF NITROUS OXID.[1]

BY CHARLES MILTON BUCHANAN, M.D.,
OF WASHINGTON, D. C.

FOR some inexplicable reason nitrous oxid, which is a valuable adjuvant in the alleviation of human suffering, seems to have been almost entirely relegated to the dental profession. In fact, it is used almost entirely to effect the painless extraction of teeth. There are, however, many other minor operations just as painful as tooth-extraction, whose *technique* is just as simple and whose successful issue demands no more time. Why are these not consummated under nitrous-oxid anesthesia?

Frequently it is desirable, if not absolutely necessary, to yield to the plea for "something to keep it from hurting," even in apparently trivial operations—especially if the nervous, emotional, impressionable elements preponderate in the patient's organization. The injection of cocaine is neither altogether painless nor entirely free from danger—the toxicity of the drug being to a certain extent a not altogether well-defined or accurately determined property, small doses sometimes causing dangerous and alarming symptoms, and *vice versa*.

Chloroform is certainly not free from danger, although its administration is not altogether unpleasant. As Lauder Brunton has tersely said: "It is like a sharp knife in the hands of the surgeon, as compared with a blunt one. It is more efficient for good, if properly handled; it is more powerful for evil, if misused." How many general practitioners are really expert in the proper administration of chloroform? Ether, while safer than chloroform, is more disagreeable, frequently causing hypersecretion from the mucous membranes of the respiratory tract, nausea, emesis, depression, sometimes even "spasm of the glottis." We are speaking now of the use of anesthetics in minor operations which are either not sufficiently serious or whose results are not sufficiently important to outweigh the fact that the patient's life is put in greater or less jeopardy by the agents spoken of.

Nitrous oxid, as we shall endeavor to show, is practically harmless, or at least incomparably safer than either cocaine, chloroform, or ether, and it is, moreover, not difficult of administration. True, its effects *are* transitory, but so are those of chloroform or ether; continuous anesthesia in either case being only secured by continuous administration.

Formerly the cumbersome apparatus required for the generation and administration of nitrous oxid did prove a consideration of some weight; but at the present time, when sufficient condensed or liquefied gas for from half a dozen to a dozen administrations can be obtained in portable iron cylinders, this objection, it must be admitted, cannot be urged as of great importance. Such cylinders should find their way into almost every physician's office; they both can and should be used in many minor operations.

When the physician or surgeon can alleviate pain or physical suffering and not jeopardize either health or life, it is not only expedient, but even obligatory, that he should do so. The apprehension and imagination of an individual can and will frequently magnify the pain of a simple incision a thousand-fold, and thereby induce a condition of mental excitation which certainly is neither desirable nor beneficial. Where we possess simple and harmless means, it is our duty to relieve the induced mental anguish, as well as the actual physical pain. Nitrous oxid not only can be, but has been, used for such purposes, and its unfailing success certainly merits for it a more general use. It has been used, among others, under the following conditions: dilatation of sphincters, lancing of felons and abscesses, injecting hydroceles, carcinoma of the lip, phimosis, compound and comminuted fractures, lithotrity, lithotomy, tracheotomy, amputation of the breast. In none of these can dissatisfaction or failure be recorded, as far as the anesthetic is concerned; on the contrary, not only was anesthesia satisfactorily maintained, but it was quickly produced, and after the operation its effects were quickly dissipated, without consequent nausea or other disagreeable symptoms.

Rapid production and rapid dissipation of anesthesia are marked when nitrous oxid is used. In the extensive series of experiments published by the Odontological Society of Great Britain, it was determined that, when the administration of the gas was pushed, complete anesthesia was produced in males in *eighty-seven seconds!* And that, after cessation of the administration of the anesthetic, consciousness supervened in one hundred and fifteen seconds, *or slightly less than two minutes!* Hence it is possible by the use of nitrous oxid to produce anesthesia, perform a minor operation, and fully restore consciousness *within five minutes.* What anesthetic known to modern science can parallel this?

Now, there is a reason for these phenomena. Most general anesthetics are highly volatile liquids, and are introduced into the system by means of the respiratory tract; they must, therefore, first be vaporized. With some due allowance, the anesthetic activity or rapidity (if I may be allowed the use of such a term) of most anesthetics is largely in direct ratio to their respective rates of volatility. Now, nitrous oxid is naturally a gas; even the compressed or liquefied form, which exists by reason of the exercise of pressure, assumes the gaseous state *simultaneously* with the release of pressure. Therefore, it is instantly ready for introduction into the system, without necessitating the expenditure of a single

[1] Delivered at the National University, December 16, 1892.

second of time to effect an intermediate vaporization. Therefore, also, its effects are soonest manifested. Moreover, being a nerve-stimulant, the mental and physical faculties are stimulated to a return to their natural functions when the administration of the anesthetic has ceased, and consequently consciousness supervenes more rapidly. Again, nitrous oxid is much more soluble in the blood than either chloroform or ether; it is, therefore, taken into the system more rapidly and in greater quantity; hence its effects are manifested more rapidly. For the same reason its elimination is effected in a shorter period of time. It is more probable that the rapid production and the rapid dissipation of anesthesia are due to the greater solubility of the agent.

Nitrous oxid gas was discovered in 1776 by Priestley, the English clergyman and scientist, who, however, elucidated but few of its properties. It was first brought into general notice in 1800 by Sir Humphrey Davy, the famous English physicist and chemist, who first discovered and made known those peculiar and remarkable exhilarating properties which earned for it the name of "laughing gas."

Davy says: "As nitrous oxid, in its extensive operation, seems capable of destroying physical pain, it will probably be used with advantage during surgical operations in which no great effusion of blood takes place."

Strange as it may seem, this valuable suggestion and remarkable prediction remained unheeded for nearly half a century—that is, as far as its practical application is concerned. In fact, the gas was largely regarded as merely one of those curious things which were more fit for lecture-room experiments than for practical application. Matters remained in this condition until December, 1844, when, in an adventurous spirit, Dr. Horace Wells, of Hartford, Connecticut, underwent an extraction of a tooth while rendered unconscious by means of nitrous oxid. So successful was this experiment that he attempted to establish the practice of inducing anesthesia by this means in dental surgery; but in consequence of an unfortunate failure in Boston he abandoned it forever. The use of nitrous oxid as an anesthetic was revived in 1863 by Dr. Colton and has been in general employ ever since.

Nitrous oxid is never found free in nature. It may be prepared by the reduction of nitric acid, by treating copper with concentrated nitric acid, and by heating ammonic nitrate. The gas produced by either of the first two methods is always contaminated with *nitric* oxid (NO) and is, therefore, unfit for use. The only process possessing any practical value is that in which ammonic nitrate is decomposed by means of heat. The reaction is thus tersely expressed:

$$NH_4NO_3 + \text{heat} = N_2O + 2H_2O.$$

The operation is usually conducted in a retort or a Florence flask. To some portion of the delivery tube a condensing device is attached, whereby the aqueous vapor is separated from the gas by condensation. This device usually consists of a glass bottle or flask submerged in a cold bath.

All ammonic compounds are more or less volatile under the influence of heat; therefore, if the heat is not carried rapidly up to such a degree as will decompose the nitrate, portions will be volatilized unchanged—that is, sublimed. Decomposition is not accomplished—that is, gas is not evolved—until the temperature has reached about 460° F.; at 480° the gas is disengaged freely and rapidly. The temperature should not be carried beyond the latter point, because at 500° and above the exceedingly objectionable and dangerous gas, *nitric* oxid (NO) is also given off. After its disengagement the nitrous oxid is collected in a gasometer by "wet displacement," the liquid over which it is collected being warm water or, better, warm brine. The gas is quite soluble in water, 130 parts of the latter dissolving 100 parts of the former. It will therefore be absorbed until the liquid becomes "saturated" with the gas. Then, as the saturated liquid gradually gives up portions of its dissolved gas to the atmosphere it will draw upon that which is stored away to replenish the loss; this can be remedied to a certain extent by covering the water in the receiver with a thin film of some non-volatile oil.

Even with the greatest care the gas is likely to contain impurities, which must be removed before use. These are chiefly nitric oxid (NO), from the high temperature; chlorin (Cl), from the decomposition of ammonic chlorid (NH_4Cl), which is one of the most frequent impurities in ammonic nitrate; ammonia gas (NH_3), and nitric acid (HNO_3), from improper regulation of the heat and a consequent improper decomposition of the nitrate. All of these substances in appreciable quantities are prejudicial to health, and hence *must* be removed before the gas is respirable. To this end the gas should be passed through a solution of ferrous sulphate ($FeSO_4$), commonly known as "copperas" (probably on the principle of *lucus a non lucendo*, because it contains no copper); then through a solution of potassic hydroxid, commonly known as "caustic potash"; and lastly through pure water. The "copperas" solution will remove any nitric oxid (NO) and also some of the nitric acid (HNO_3) present. If care be taken in the regulation of the heat—that is, if it be not allowed to reach the proximity of 500°—the "copperas" solution is really unnecessary. But if it be used, which is more advisable, we possess a safeguard against deleterious substances generated by carelessness or accident in the regulation of heat. The "potash" solution will remove any chlorin (Cl) or nitric acid (HNO_3) present; and the water, especially if slightly acidulated, will remove any ammonia gas (NH_3) present. Ammonia gas and nitric acid, however, are not common impurities, the commoner ones being chlorin and *nitric* oxid.

Nitrous oxid is a clear, colorless, gaseous body, possessing a sweetish odor and taste. It is 1.527 times heavier than air; as already stated, it is soluble in water; it is more soluble in alcohol. It is not very soluble in *warm* water and much less so in warm brine, and is easily liquefied by the application of cold or pressure. It will neither burn nor support life for any considerable length of time. It will, however, support *vigorous* combustion, but not feebly burning bodies; for instance, burning sulphur or a *feebly* glowing ember will be extinguished when immersed in the gas, but a vigorously burning stick of wood will burn even more actively or brilliantly in the gas. Bodies which have great chemical activity in combining with oxygen, such as phosphorus, burn very readily in this gas.

The characteristic feature of nitrous oxid gas lies in its marked anesthetic properties; according to the amount ingested it induces intoxication, exhilaration, and finally complete insensibility. It is also said to possess slight tonic and diuretic properties, for the exhibition or production of which it is recommended either in substance or in aqueous solution. It is essentially a nerve-stimulant, like oxygen, but it has the advantage of influencing both the intellectual and the emotional natures. It is now considered a perfectly safe anesthetic, the mortality from its use being almost *nil*.

Chemically, nitrous oxid resembles oxygen more nearly than any other substance, although its compound nature naturally prevents very great chemical activity. In fact, this is the substance widely advertised by quacks under the name "compound oxygen." We can probably contrast the differences between oxygen and nitrous oxid best by placing them in tabular form:

	Nitrous oxid.	Oxygen.
Odor	Sweetish.	None.
Taste	Sweetish.	None.
Solubility in water .	10 parts dissolved in 13 of water.	Slight.
Effect on combustion	Supports only *vigorous* combustion.	Supports *all* combustion.
Nitric oxid (NO) .	No effect.	Red fumes of NO_2.

Of course, by far the greatest and almost only therapeutic application of nitrous oxid is as an anesthetic. Nevertheless it has been recommended as very efficacious in the treatment of such disorders as mania, dementia, melancholia, neuralgia, sciatica, insomnia, hypochondria, hysteria, asthma, some forms of functional heart-trouble, and also for all of the disagreeable symptoms that follow in the train of the morphine and tobacco habits. Its use, diluted with air, in the treatment of certain forms of atonic nervous disease, is highly indorsed by Allen McLane Hamilton. It is also recommended by Ziegler as a stimulant in chloroform-poisoning, in poisoning by carbon dioxid, carburretted hydrogen, hydrocyanic acid, and also in suspended animation from any cause. However well-sustained Ziegler's claims may be, the use of oxygen would be infinitely superior under the conditions enumerated. For internal administration the gas is given by inhalation or in aqueous solution, either by the mouth or by the rectum.

However rosy and bright these claims may be, they have been disputed. Several investigators have searched diligently for evidence to warrant the placing of nitrous oxid in the already overburdened armamentarium of materia medica; but most of these have been forced to the conviction that such efforts were useless. The result has been fitly expressed by Birdsall;[1] he tried the new aspirant in migraine, persistent headache, the muscular pains of influenza, paralysis agitans, asthma with chronic bronchitis, insomnia, melancholia with organic cardiac disease, the opium-habit, hypochondriasis, neurasthenia, mental depression resulting from alcoholic indulgence, chronic bronchitis, and hysteria. In not a single instance did benefit follow—in fact, he expressed himself thus: "My own view, based on the physiological and clinical data which I have been able to collect up to the present time, is that the uses of nitrous monoxid for medical and surgical purposes are restricted to its effects as an anesthetic and a *placebo*." Clinical experience seems to force us to the belief that internal medicine can hope to find no special merits in this substance.

To the majority of physicians nitrous oxid is known only as a general anesthetic; it can also be used as a local anesthetic. As supplied, compressed and liquefied, it is convenient for the production of either form of anesthesia. On release of pressure the liquid nitrous oxid immediately assumes the gaseous form, and in doing so "absorbs heat" from surrounding objects, or, as is sometimes said, "renders heat latent." If a spray is allowed to play upon a part it will produce local anesthesia of the part, just as in the case of the ether-spray or prolonged contact with ice; this anesthesia, although produced in a manner similar to that obtained by use of the two last-named agents, is probably slightly more advantageous.

When first inhaled, nitrous oxid is said to cause an acceleration of the pulse which soon gives way to depression. In my opinion this temporary acceleration is largely due to the excitement under which the patient naturally labors and which is soon overcome by the depressing action of the gas. If the pure gas be inhaled insensibility is usually produced in from half a minute to three minutes; when insensibility becomes complete, there is accompanying deep cyanosis, caused by venous stasis, and also stertorous breathing. This cyanosis is striking and alarming to one witnessing it for the first time; it is indicative of cardiac depression.

Anesthesia is most probably caused by a combination of three factors, namely: asphyxia, cell-paralysis, and cell-coagulation. In asphyxia the blood lacks sufficient oxygen to carry on the normal functions of oxidation; this condition can be induced by any agent capable of cutting off the supply of oxygen to the blood. That nitrous oxid does cause such a condition is shown by the following events: 1. Cardiac and *pulmonic* depression; 2. Cyanosis; 3. The symptoms of asphyxia do not supervene when about 20 per cent. of oxygen is added to the nitrous oxid—*neither is anesthesia produced;* 4. Animals immersed in nitrous oxid die of asphyxia,[1] with all of the symptoms caused by immersion in nitrogen; 5. The blood in nitrous oxid narcosis shows a marked deficiency of oxygen, the spectroscope revealing the presence of *reduced* hemoglobin; 6. Animals immersed in nitrous oxid live no longer than when immersed in nitrogen.

The fact that anesthesia is dependent to some extent upon the production of asphyxia is shown by the facts that—

1. Insensibility does not supervene until the proportion of oxygen in the blood is reduced to 3 or 4 per cent.; 2. Anesthesia is not produced if appreciable quantities of oxygen be mixed with the nitrous oxid; 3. Complete anesthesia does not occur until the blood becomes very dark; 4. Nitrogen is capable of producing the same phenomena as nitrous oxid;[2] 5. The blood

[1] New York Medical Journal, March 7, 1891.

[1] British Journal of Dental Science, xxv, 725. Philadelphia Medical Times, Nov. 15, 1873.

[2] Archives de Physiologie, July, 1873.

during the stage of narcosis shows the presence of *reduced* hemoglobin.

It must be accepted, then, that asphyxia is induced and that it is at least one factor in the production of anesthesia, and the most important one at that; for the other causes are really effects of nitrous oxid asphyxia. As a result of this condition the supply of oxygen to the nerve-centers is cut off, and their nutrition and functional activity thereby suffers.

Nitrous oxid is a nerve-stimulant; its action upon the impaired nerve-centers probably produces cell-paralysis by over-stimulation, but asphyxia places the cell in the condition in which the over-stimulation is enabled to produce such effect.

Cell-coagulation is probably due to a combination of both of the foregoing causes, namely, asphyxia and over-stimulation. If the transmission of sensations, pains, or motor influences is a matter of molecular motion or activity, we can readily see how coagulation can impair or overcome entirely such transmissions by either retardation or cessation of molecular activity.

Asphyxia and its phenomena are dependent upon the altered condition of the blood. As the brain contains a relatively large amount of blood, if anesthesia depends to any extent upon asphyxia its effects upon the brain should be among the first exhibited. In fact, the cortical functions are most readily disturbed by any impairment of the phenomena of oxygenation, and the first and most striking effects of nitrous oxid are shown in disturbed cerebral action and impairment of the higher cerebral functions. Dr. Underwood claims that under the influence of the anesthetic there is a progressive paralysis of:

1. The cerebrum, in consequence of which volition is destroyed.

2. The sensory centers of the cord; motion becomes erratic; sensory stimuli are not responded to.

3. The motor centers of the cord, as a result of which motion is destroyed.

4. The motor and sensory centers of the medulla oblongata, after which respiration, the heart's action, and all the functions of life cease and death supervenes.

The chief danger lies in cessation of respiration and circulation; it is more important, however, to watch the respiration, for the heart flags last. Notwithstanding all this, nitrous oxid is extremely safe, for long before life is actually menaced ample warning is given by many obvious danger-signals. Moreover, it is never desirable to push the anesthetic beyond the production of stertor and cyanosis. Any such dangerous symptoms as may arise are readily amenable to the administration of oxygen, artificial respiration, and stimulation of the heart and lungs.

Statistics give the number of deaths under chloroform as one in three thousand, or thirty-three thousandths of one per cent. (0.033 per cent.); while the deaths under ether are given as one in twenty thousand, or five thousandths of one per cent. (0.005 per cent.). At the Tenth International Medical Congress held in Berlin in 1890, it was stated that fully seven hundred and fifty thousand persons annually took nitrous oxid *in the United States alone*. Making on this basis an "average" calculation, between ten and eleven million people have taken the gas in this country since its reintroduction by Dr. Colton. In that time only six cases of death attributed to nitrous oxid have been reported in the United States; and of these, four have been eliminated as being in no way caused by the gas. Of the remaining two deaths one occurred in 1864, just one year after the reintroduction of the use of nitrous oxid, when its nature, effect, impurities, and methods of their removal were not fully understood. The patient *fully* recovered from the effects of the gas, walked into an adjoining room apparently well, returned, complained of pain and dyspnea, sank upon a sofa, and expired in a few minutes. The coroner's verdict was death from congestion of the lungs induced by inhalation of nitrous oxid gas. The latter half of this verdict is ridiculous; in the first place, consciousness supervenes rapidly, and when consciousness has been restored the patient is in no danger from the gas; in the second place, the patient had fully recovered from the effects *of the gas;* the unpleasant symptoms described were not due to it, but to some irritant *impurity*, undoubtedly either chlorin or *nitric* oxid. If the man died from congestion, it was induced by this impurity and not by the gas. The other case occurred in a dentist's office in Chicago two or three days before the great fire; on account of the confusion caused thereby the death became known to few and was soon forgotten. Of the particulars we know nothing, so that really there is no sound evidence upon which to charge even these two deaths to nitrous oxid; on that basis the mortality in this country would be *nil*. However, assuming the burden of these two deaths, its mortality would be represented as two in ten million five hundred thousand, or two-hundred-thousandths of one per cent. (0.00002 per cent.)! At this rate it is two hundred and fifty times safer than ether, and one thousand six hundred and fifty times safer than chloroform! And yet it is being constantly used by those of all shades of experience, from the tyro to the "expert"; many who would refuse to use either chloroform or ether do not hesitate to administer nitrous oxid; there are many who use it who know nothing of it. No anesthetic is handled so recklessly and ruthlessly and yet no anesthetic can parallel its marvellously low record of death. If other anesthetics were placed under like conditions, their mortalities would be multiplied a hundred-fold. Does it not, then, seem strange that with its few inconveniences and its incomparable advantages this agent is not more largely used?

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The Elimination of Lead in Chronic Lead-poisoning.—MANN (*British Medical Journal*, No. 1678, p. 401), from a careful study of two cases of chronic lead-poisoning, has arrived at the conclusion that lead is slowly and more or less continuously eliminated by the bowels and, to a much less extent, by the kidneys. Once deposited in the tissues it exists as a stable chemical compound, upon which drugs have little if any influence. The best aids to elimination are baths and massage, together with fresh air, good food, and all other measures by means of which the general health may be improved and healthy metabolism be promoted. It is denied that potassium iodid promotes elimination of lead, although it is admitted that the drug exerts a beneficial influence in some other way.

ORIGINAL ARTICLES.

SUPPURATIVE PYLEPHLEBITIS AND HEPATIC ABSCESS SECONDARY TO APPENDICITIS: WITH A REPORT OF TWO CASES.

BY GEORGE ERETY SHOEMAKER, A.M., M.D.,
VISITING SURGEON TO THE METHODIST HOSPITAL OF PHILADELPHIA.

SUPPURATIVE pylephlebitis with hepatic abscess is so unusual during life and frequently so obscure a condition before death that it is often overlooked and seems to receive but little attention among clinicians, particularly those of England and America. Two cases that occurred in my practice within the past few months have been reported to the College of Physicians, of this city,[1] and are of more than usual interest. It may be worth while narrating them, to call renewed attention to a disease the literature concerning which is widely scattered and not abundant.

CASE I. *A common pin in the vermiform appendix; secondary retro-peritoneal infection; liver-abscess.*—H. P., aged eighteen years, a furniture polisher, when admitted to the surgical ward of the Methodist Hospital, under my care, was suffering from urgent symptoms of bowel-obstruction, fecal vomiting, and subnormal temperature, with well-marked peritonitis. He died about thirty hours after an operation undertaken for abscess about the appendix. The condition of the liver and retro-peritoneal tissues was unknown at this time and was completely masked; otherwise no operation would have been undertaken, as death was inevitable.

The history previous to admission was meager and unsatisfactory. The man had been ill twelve days, chiefly under home treatment. The trouble began with a chill and coincident pain in the right hypochondrium, which his sister since states he then referred to as "that old pain." When first seen, about an hour before the operation, he had had complete obstruction of the bowel for five days, and obstinate constipation for several days before that. There had been fecal vomiting and subnormal temperature for twelve or fifteen hours, with evident peritonitis.

The abdomen was very tense; the walls edematous, dusky, and more resistant in the right iliac region, though from the great tension the presence or absence of a tumor could not be made out. The breathing was thoracic, 36 to the minute; the temperature, 95.6°; the pulse, from 90 to 118; the mind clear, though there had been delirium. There was no pain, but a gulping up rather than a vomiting of a thin, brown, offensive fluid, with decided fecal odor. Well-applied efforts to move the bowels with calomel, salines, and gravity enemata of glycerin, magnesium sulphate, and turpentine, had failed. There was no discoverable evidence of liver-disease; no jaundice, soreness, redness, venous obstruction, or demonstrable enlargement of the organ; while there was evident obstruction of the bowels, with peritonitis, which the dusky and edematous appearance referred to the right side.

Incision in the right semilunar line disclosed pus and thick, yellow lymph as soon as the peritoneum was cut. Two or three ounces of pus were washed out from a cavity within the peritoneum, limited outwardly by the pelvic wall and inwardly by adherent coils of intestine. The intestines were tightly distended, and as adhesions appeared to limit the pus-cavity on all sides, it was not considered wise to search for and remove the appendix, which could not be readily felt. Taking into consideration the man's condition, such an attempt at this time would have been highly dangerous. The abscess-cavity was flushed with boiled water and packed with iodoform-gauze about a glass drain, the incision being left open. This procedure gave great relief. The temperature rose to normal, and in a few hours reached 99.8°. The vomiting and hiccough stopped at once, while large quantities of urine began to be excreted, no less than eighty-seven ounces being obtained by catheter at short intervals in the next twenty-four hours. The improvement did not, however, continue beyond this period. The bowels did not move and the patient sank rapidly on the evening of the day following the operation, the pulse having never been over 120, the temperature never over 100.6°.

Post-mortem examination showed the cavity at the seat of operation to be clean and sweet. The parietal surface of the great omentum was bathed in pus, which had apparently come from a ruptured abscess of the liver. There was no pus upon the intestines, but a very recent general peritonitis had caused slight general bowel-adhesions and a widespread deposit of fresh, translucent coagulated lymph, which, immediately below the liver and in the left flank, was yellowish and in semi-solid masses. The appendix extended downward, and, though much distended, inflamed, and surrounded by recent plastic deposit, was apparently not perforated; nor was it gangrenous. It contained a common pin, head downward. There was purulent inflammation of the connective tissue and veins behind the peritoneum and along a path, two or three inches wide, from the root of the mesentery upward along the front and to the left of the spinal column. This area, infiltrated with grayish pus, extended a short distance between the layers of the gastro-hepatic omentum and involved the structures at the transverse fissure of the liver. This organ contained within its substance an abscess, apparently acute, situated near the surface of the right lobe at its hightest point. The pus, which was yellow, occupied a single irregular cavity, in size 2 by 2 by 3 inches. The liver was easily separated from the diaphragm, pus appearing as soon as this was attempted. As has been said, the front surface of the great omentum was covered with fluid pus, which had not yet reached the intestinal surfaces in visible quantities.

It is probable that the *general* peritonitis was caused by the rupture of the hepatic abscess and

[1] Nov. 2, 1892; Feb. 3, 1893.

leakage in front of the liver and omentum after the operation. Had the whole attack, including the obstruction of the bowel at the time of operation, been due to a general and not to a localized peritonitis, it seems improbable that merely washing out the circumscribed area, which was shut off in the right side, would have caused the improvement noted for the first twenty-four hours.

It is also probable that the pin in the appendix was the original cause of trouble, and that it had, by piercing the appendix-wall and the adjacent peritoneum, infected the underlying connective tissue and veins. These veins belong to the portal system and reach the liver directly, though the neighboring lymphatics enter the general venous circulation by way of the thoracic duct, which enters the left subclavian vein. The abscess was single and was large for one of secondary infective origin. In size, however, it has a parallel in the following case:[1]

A French soldier, previously healthy, had pylephlebitis following appendicitis. At the autopsy there were found several abscesses of the liver, one of them large, involving the whole thickness of the left lobe of the liver. The portal vein was filled with pus to its smallest ramifications. There was jaundice, but no tympany and no general peritonitis.

It may be remarked in passing that the finding of a genuine foreign body in the appendix, such as this pin, is very rare; as almost all the bodies so found are fecal concretions, like that in the case about to be narrated. They may bear a general resemblance to "cherry-stones" or "grape-seeds," but are not such in reality.

CASE II. *Gangrene of appendix; acute suppurative inflammation of branches belonging to portal system; multiple liver-abscesses.*—This was almost a typical case of pylephlebitis suppurativa as described by Frerichs.[2]

W. S., seventeen years of age, a packer, had been previously healthy. His father died of enteric fever and the mother of apoplexy, though a year before her death I removed a sarcoma of the breast and axilla.

On November 12th, after eating indigestible food for breakfast and dinner, the patient worked for some hours in an unusual draught of cold air, and was seized with pain just below the navel, together with nausea, followed in the evening by vomiting. Two solid stools passed that day.

On the 13th the abdominal pain became localized in front of the anterior superior spinous process of the ilium on the right side, passing a little backward along the iliac crest. There was some difficulty in fully extending right thigh. He had a severe chill in the evening, followed by sweating and vomiting. He had one solid stool.

On the 14th localized pain continued. There was some nausea and gulping, but no vomiting; he had two severe chills (shaking his bed distinctly) in the evening, and two in the night, followed by profuse sweating. He had one loose stool.

I saw him for the first time on the 15th, finding him up and dressed at 9 A.M., with a temperature of 99° and a pulse of 90; the conjunctiva was yellowish; there was decided tenderness over the appendix, with resistance of muscles, but no tremor and no pain, even on full breathing; there was no tympany, and his mind was unusually clear. The diagnosis of appendicitis was announced, and the family informed that operation would have to be considered, though not at that moment demanded.

The patient now passed out of my hands, and I am permitted to report his subsequent history by courtesy only. He was admitted to one of out hospitals, where he had immediately a violent chill, followed by a temperature of 104° and sweating. Until this time the diagnosis did not appear at all obscure, but when seen next day by the visiting surgeon, the presence of appendicitis was not deemed positive, because local tenderness had disappeared from the right iliac fossa; nor was it developed by rectal pressure. There was not even thickening to be felt by the rectum, and the resistance of the abdominal muscles was slight. The abdomen was not only flat, but scaphoid.

From this time on until death, eight days later, the obscurity of the diagnosis deepened. Jaundice set in and soon became intense; there was almost complete insomnia, but no delirium. Full doses of quinine seemed to moderate the chills, while small doses of calomel were followed by frequent, thin, greenish stools. There was a very irregular temperature, reaching a little over 103° or dropping to 99°. The liver was somewhat enlarged but not tender; the spleen was also enlarged. Rapid emaciation followed, with brown, dry tongue; dulness succeeded the abnormal brightness of intellect, and the patient died a few hours after he had been tranferred from the surgical to the medical ward, and just twelve days after the onset of the disease.

Autopsy. Emaciation was deep and there was universal jaundice. The heart was normal; the lungs were moderately adherent at the apices, without abscesses. The kidneys were large, congested, the capsule stripping easily; no pus was present. The spleen was about twice the normal size and contained at least one hemorrhagic infarct as large as a pea. The intestines were not distended. There was no sign of general peritonitis; white gauze dipped in the scanty serum at the bottom of pelvis stained clear yellow. On lifting the cecum and separating extremely slight adhesions, about two drams of thin, gray, flocculent pus appeared about the appendix, which was thickened and gangrenous in its middle third, a slough about three quarters of an inch in length having dropped out of the posterior wall. A concretion, one-quarter of an inch in diameter, afterward shown to be fecal and not a gall-stone, occupied the upper and healthier third of the appendix, completely filling its lumen. An area of parietal peritoneum upon which lay the appendix was gray-

[1] Archives de Médecine et de Pharmacie Militaires, Paris, 1891, xviii, 62.

[2] Clinical Treatise on Diseases of the Liver, 1861.

ish-black and gangrenous, showing a small point of perforation. Behind the peritoneum and extending obliquely upward from the root of the appendix toward the front of the spine was an infiltrated area of loose connective tissue and veins, which could be picked up within the abdominal cavity like a section of bowel. This, when cut across, was seen to be inflammatory, the distended veins within it having thickened walls with a dirty-gray lining, and containing a grayish fluid. The liver was somewhat enlarged, and was studded throughout with abscesses of from a line to an inch in diameter. These were very numerous about the transverse fissure. The gall-bladder was distended by a mucoid fluid. No gall-stones were found. The brain was normal. No pus was found elsewhere than described. There were numerous ulcerations of the mucous coat of the cecum, the majority about two lines in diameter and the largest a third of an inch. One of these encircled the opening of the appendix into the cecum. This opening barely admitted a probe.

The points of interest in this case are two: Its obscurity from a diagnostic point of view after the liver-symptoms appeared; and the secondary venous and hepatic involvement.

The clinical history emphasizes the fact, well known to many, that the most serious disease of the appendix, going on to gangrene and perforation, may exceptionally exist without the traditional signs of peritonitis: without tenderness on deep pressure, without a demonstrable tumor, without tympany and without pain, at least in the later stages. There can be no reasonable doubt that operation on the third or fourth day would have saved this man's life by forestalling the infection of the veins, just as it would have killed him, or, at least, would have done no good, after the pyemic symptoms had set in. It is such cases as these, growing more obscure as the patient grows worse, that add force to the reasoning of those who would operate at once in every case as soon as the diagnosis of appendicitis is made. While there is, however, so large a preponderance of recoveries from attacks which do not go on to pus-formation, that position seems to me to be extreme.

The diagnosis of suppurative inflammation of the portal vein, or pylephlebitis suppurativa, is a matter on which there is no small difference of opinion. Some writers consider a diagnosis during life to be a mere matter of guesswork, while others consider it quite feasible. As has been suggested by Von Schüppel, this discrepancy can be accounted for by the obscurity or clear character of the cases individual writers may have seen. As few men see more than two or three cases, they are likely to generalize from these. The following points are given[1] as the most important in recognizing the condition:

1. "The presence of an affection which we know from experience may act as a starting-point . . . especially perityphlitis, a purulent focus, or an ulceration of the stomach, intestine," etc.

2. "Pain in the epigastrium, above the umbilicus, or in the right hypochondrium, or any other situation in which the pylephlebitis may start."

3. "Violent chills, which are repeated at irregular intervals, and are followed by great heat and profuse sweats, while the temperature in the intermission remains abnormally high (and pyemia in the ordinary surgical sense is excluded)."

4. "The recent, uniform, and painful enlargement of the liver. Enlargement of the organ is not constant, but tenderness is always present."

5. "Considerable enlargement of the spleen, especially when we can follow its development."

6. "The icteric color of the skin and urine in addition to the biliary diarrhea."

7. "Rapid emaciation of the body and profound loss of power."

8. "The occasional development of diffuse peritonitis and typhoid symptoms in the later stages of the disease."

Jaundice is said to occur in three-fourths of the cases by Von Schüppel. Eichhorst[1] says that it is almost always present, while in liver-abscess, not pyemic, it is one of the rarer symptoms. Rouis[2] found it to be present in 17 per cent. of the 258 tropical cases included in his statistics. Waring[3] found it in somewhat less than 6 per cent. of his cases. All observers note the violence of the chills. There is seldom time for the development of ascites or of enlargement of the superficial abdominal veins. Only one termination is known for the disease, and that is death. This occurs within two weeks as a rule; sometimes after five or six.

The abscesses of the liver are usually very numerous and small, from the size of a pin-head to that of a cherry, though they may reach a much larger size. The walls of the portal vein or of any contributing branches which may be involved are thickened, reddish or grayish; the intima is of a dirty gray, swollen, and at times much softened or completely broken down. The contents of the inflamed veins are described as ichorous, putrid, dirty-gray or reddish-brown fluid. The connective tissue adjacent is also frequently inflamed and infiltrated.

All abscesses of the liver were supposed by Budd[4] to be secondary to inflammation or ulceration somewhere in the digestive tract, as in dysentery, ulcer of the stomach, or proctitis. This theory,

[1] Ziemssen: Cyclop. of the Practice of Medicine, ix, 822 et seq.

[1] Specielle Pathologie und Therapie, 4th ed., 1890, ii, 452.

[2] Recherches sur les Suppurations endémiques du Foie, etc. Paris, 1860; p. 189.

[3] An Inquiry into the Statistics and Pathology, etc. Ed. John Waring, Resident Surgeon of Travancore, 1854, iii.

[4] Diseases of the Liver, 1853.

though for a long time received with hesitation (Flint,[1] Frerichs[2]), is gradually gaining ground, and is probably, in the main, correct. At the time of examination the original disease may not be present, or it may not be found, while the embolus, which was the means of transfer, has long before disappeared in the resulting abscess. Many of these cases of ordinary liver-abscess run a prolonged course, as is well known, and often give rise to little disturbance of the system. They either rupture spontaneously, or are drained by operation, with a resulting cure in a considerable proportion of cases.

Very different, however, is the clinical picture when from the same starting-point—an appendicitis, for example—the portal vein or its contributing branches become involved in a suppurative inflammation, as in the last case narrated. These cases all die (Osler, Eichorst, Von Schüppel), and die quickly, with symptoms of the most violent character. The abscesses which form in the liver are multiple, and before large areas have time to break down death occurs from septic intoxication. It is not always that the inflammation spreads to the portal vein by continuity along a contributing branch, but a septic embolus may be the means, as in the tropical abscess. In each case the embolus traverses the same vessels. In the tropical abscess there is at some period abundant involvement of intra-hepatic portal radicles. What is the cause of the different result? It seems to me that it must be sought in the different characters of the infective material. There must be different ptomaïnes involved, probably different bacteria, so that in the one case a comparatively mild and circumscribed hepatitis is set up, and in the other an infective inflammation of all points of contact in liver and vein, which rapidly destroys life by a species of pyemia. It is these cases which are comparatively rare. An examination of late volumes of the *Index Medicus* will disclose from one to two cases per year reported as pylephlebitis, but seldom in American or English periodicals, the German predominating. For the same period the literature of ordinary hepatic abscess is enormous. References to some typical cases are given below.[3]

3727 CHESTNUT STREET.

Virchow on Cremation.—Virchow has written a letter to the Board of the Berlin Cremation Society that he considers cremation "very useful indeed with respect to economic as well as sanitary matters," especially in times of epidemic.

[1] Practice of Medicine, p. 604. 1880. [2] Loc. cit., p. 116.

[3] Sonnenfeld: Wiener med. Presse, 1885, xxvi, 1259. Colquhoun: Lancet, London, 1887, ii, 606. Aufrecht: Berlin. klin. Wochenschr, 1869, S. 308. Payne: Path. Trans., 1871. Many references to German and French sources are given in Ziemssen's Cyclopedia of Practice of Medicine, ix, 805.

REMOVAL OF THE DRUM-HEAD AND OSSICLES IN DISEASES OF THE MIDDLE EAR.

BY G. MELVILLE BLACK, M.D.,
OF DENVER, COL.,
PROFESSOR OF RHINOLOGY AND LARYNGOLOGY IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF COLORADO;
EX-HOUSE-SURGEON TO THE MANHATTAN EYE AND EAR HOSPITAL, N. Y.

THE operation of removal of the drum-head and ossicles, which has been popularized in this country by Dr. Sexton, of New York, has, as to its feasibility, been a source of contention among otologists since Dr. Sexton commenced advocating it as a means of benefiting certain otherwise incurable cases of suppurative and non-suppurative disease of the middle ear. That this should be the case is not at all unnatural, as a great number of our conservative men will not recognize new procedures of this kind until their thorough investigation by others, and oftentimes not then until they are compelled to do so or be denominated as "behind the times."

During the past year a number of articles, for and against this method of treatment, have appeared from the pens of prominent otologists all over the country, with the publication of cases which swell the number reported to quite considerable proportions. The operation is a rational procedure, especially in suppurative disease of the middle ear.

In the non-suppurative forms the indications for operative interference are not quite so favorable. My personal experience in the form last mentioned has been with cases in which little or no benefit could otherwise be expected. The cases selected were far advanced—so much so that the round window of the labyrinth had undergone calcification and the stapedial articulation with the oval window was ankylosed, and intra-labyrinthine changes no doubt had taken place.

The operation does not involve any danger to life, and in my experience there is no tendency to suppuration after healing has taken place. It would naturally be expected that, owing to the exposure of the tympanic cavity to the influences of the atmosphere, there would be a tendency to inflammatory exacerbations, but such does not seem to be the case. The operation itself is a delicate one, requiring a special set of instruments, devised by Dr. Sexton, and a good light. A general anesthetic is necessary.[1]

The removal of the transmitting mechanisms, which had long since ceased to perform their functions in the cases reported, did not materially improve the hearing, because the oval and round windows of the labyrinth were not sufficiently free from disease to transmit the sound-waves, which now

[1] For a full description of the operation, see Sexton, "The Ear and Its Diseases," page 385.

came directly to them instead of by way of the drum-head and ossicles.

The object of this operation, then, is to remove a transmitting mechanism that, from its diseased condition, has become an obstruction, and to allow the sound-waves admittance to the labyrinth without interruption. In the suppurative variety of disease —especially that form denominated "attic," *i. e.*, when the upper portion of the atrium (drum-cavity) is the part diseased, the perforation in the drum-membrane being above the short process of the malleus, and which has a special fondness for being extremely chronic—this operation is of the utmost value, not only stopping the discharge but greatly improving the hearing.

In this variety, as well as in all chronic suppurative diseases of the middle ear which do not improve under the usual methods of treatment, dead bone is the cause of its chronicity. The body of the malleus and the whole of the incus are very liable to necrosis in "attic" suppuration, owing to poor drainage and inability to cleanse thoroughly. The disease progresses indefinitely, with short intervals of remission, during which the patients think they are well, but soon their hopes are dashed to the ground by a recommencement of the discharge.

A chronic discharge from the middle ear is always a dangerous affair, although the profession often regards it lightly, and the patient gets used to it and considers it more of a nuisance than anything else. There is a possibility of an acute inflammation being set up at any time, and if the drainage is not good or if the mastoid antrum is in a chronically inflamed state, the acute inflammation is very liable to extend, and mastoiditis result. We all know what mastoiditis means. Therefore if any means is at hand by which these otorrheas can be permanently cured, it is worthy of our consideration. I publish these few cases with a view of placing them on record for what they are worth, and to enlist myself among others engaged in this work. I am in hopes of being able to publish at some future time cases operated upon for non-suppurative disease of the middle ear in which the process had not extended to a point beyond all hope of improvement, and to be able to show by the increase of hearing the value of this procedure.

Mrs. J. H., aged twenty-four, came to me July 8, 1891. When eleven years of age she had suppuration of the cervical glands. About twelve years ago she became deaf in the right ear, and there soon followed a discharge, but no pain at any time. She has been under the care of a number of competent otologists at different times, but has only been relieved, never cured.

The watch was heard by the right ear only when pressed againt the auricle, and by the left ear at a distance of four inches. A middle C tuning-fork was heard better by bone-conduction than by aërial conduction. A hole about 2 mm. in diameter existed in the drum-head above and slightly posteriorly to the short process of the malleus, in what is known as the membrana flaccida. A granulation was protruding from this perforation. The discharge was very free, and extremely offensive. I advised removal of the drum-head and ossicles at once, but she preferred having me try other treatment first. I touched the granulation protruding from the perforation with chromic acid, and ordered syringing and inflation of boric acid into the external auditory canal twice daily. This she continued for several weeks; but seeing no improvement, I instructed her to keep up the syringing and to instil into the canal, three times a day, twenty drops of a 5 per cent. solution of styrone in dilute alcohol, and to report to me in a week. After a fair trial of this, with no improvement, I discontinued it. I then tried the tympanic syringe and instillation of a 5 per cent. solution of hydrochloric acid once daily.

None of these agents in any way served to lessen the discharge or to moderate the odor. She now consented to the operation, which I did under chloroform, removing the drum-head and malleus and what was left of the incus, this being almost entirely destroyed by necrosis. The head of the malleus was also necrotic. The upper part of the annulus tympanicus and the upper portion of the tympanum were necrotic. I scraped these necrotic parts with a sharp curette. After cleansing and drying the tympanum, I blew into the cavity some powdered aristol. She had some pain in the ear and dizziness for the following three days. The cleansing and boric acid were continued for two weeks, when it became necessary to cauterize a few granulations hanging from the upper part of the tympanum at the site of a former dead bone. She had become quite expert in treating her own ear, and could cleanse it and use the boric acid as well as I could. She kept up this treatment for some six months, coming to see me every week, it being necessary to cauterize the granulations in the upper part of the tympanum about this often, as there was evidently dead bone there which caused them to form. At the expiration of this time the granulations, discharge, and odor had ceased, and the tympanum was dry and healthy. A hole about 4 mm. in diameter remains in the drum-head. She has had no recurrence of her trouble up to the present time, and will not have, as the cause does not now exist. Hearing is not improved.

Mr. J. S. M., aged eighteen, came to me December 10, 1891. About ten years ago he was vaccinated, and as a result he was quite ill for several days. Following this his right ear began to discharge, but this was not attended with any pain. The discharge had continued up to the present time, with periods of intermittence, during which he was pronounced cured by his attending physician, under whose care he was for about four years.

The watch was heard by the right ear on contact with the auricle, and forty inches distant by the left ear. A large perforation of the drum-head existed above the short process of the malleus, in the mem-

brana flaccida of the right ear; the discharge was scanty and very offensive. An operation was advised without delay, as I did not think I should be any more successful in curing him by local applications than the otologist who had previously treated him. As he was attending school, and the holiday vacation was drawing near, the operation was postponed until January 2d. On that date he came prepared for the operation, complaining, however, that the ear had been somewhat sore for the past few days. Upon examination I found the canal filled with caseous pus. After removing this, it was found that the drum-head was entirely absent, and the tympanum was very red and granular. I postponed the operation and ordered the ear syringed twice daily, the patient to report in two days, which he did. The condition was found to be somewhat improved. He was ordered to keep up the syringing and report in a week. At the end of this time the tympanum was assuming a more healthy appearance. The malleus could be plainly seen hanging down from above, with a remnant of drum-head on each side of it. On January 17th, the operation was performed under chloroform. The attachments of the malleus being severed, the bone was grasped with a pair of Sexton's forceps, but it crumbled under the pressure. It was removed piecemeal. The incus was not to be found, having become absorbed or thrown off with some of the previous discharges. Necrosed bone was found in almost all parts of the tympanic cavity; the latter being scraped with a sharp curette, until no more rough spots could be found with the probe. A small quantity of aristol was blown over the raw surface, and the canal was closed with cotton. For about ten days he was very dizzy, but at the end of this time he was allowed to return to school. The discharge had been quite free, but it had no odor. The ear was syringed twice daily. The syringing was continued, with inflation of boric acid, for several months. An occasional granulation would present itself, which would require touching with chromic acid. He was discharged last June, cured. The tympanum was dry, all the parts had healed, and there was no discharge. Hearing was not improved.

D. L., aged twenty-five, came to me February, 1892. About eight years ago, while in London, Eng., he commenced having ringing noises in the ears, and some deafness. He was treated in the Metropolitan Ear and Throat Infirmary, and the Westminster Hospital for about two years, but without improvement. He came to Colorado five years ago, and was under the care of an otologist in Denver for some time, but received no benefit. He has never had any discharge from the ears.

The patient could not hear the watch, except when pressed very hard against the right ear, and not at all by the left. He could hear the snapping of finger-nails by the right at a distance of eight inches, but this was not heard by the left. Voice was heard by the left when very close, but he could not understand what I said. Hearing was very much better in a noisy place. The tuning-fork was heard better by bone-conduction. The drum-heads were sunken and opaque. The light-spot was absent on the left from want of polish. I explained to him that I could not help him by treatment, and could only offer an operation as a possible means of benefit, although this was not encouraging. He finally agreed to have me operate on the left ear, which I did on March 18th, under chloroform. No after-treatment was instituted except cleansing. This I found necessary, owing to a sero-mucous discharge, which finally became purulent. At the end of a week he returned home, which was some distance from the city. He was instructed to keep the ear clean and to report to me in a week. The drum-head finally healed, this being contrary to what we desired. I made a good large hole in it with sulphuric acid. It continued to show a disposition to heal over again, but I prevented this by painting the margins of the perforation with trichloracetic acid. By June, 1892, the tympanum was dry, with a permanent opening through the drum-head. The amount of benefit was very small. He can now understand what is said to him when the mouth is within six inches of the ear, speaking in a normal tone of voice. This he could not do at any distance before the operation, no matter to what extent the voice was raised. He hears the snapping of finger-nails at one inch distant. Before the operation he could not hear the snapping at all.

M. A. C., aged thirty-three, came to me January 27, 1891. Thirteen years ago he had "nervous prostration," was dizzy, and had a tendency to fall forward during one of these dizzy spells, which came on several times a day, especially after any exertion or excitement. He came to Colorado in 1882. He began to improve shortly after arrival, with gradual cessation of the dizzy spells, until within the past four years he has had none at all. He noticed, about three years ago, that the hearing of the right ear was becoming defective, and was attended with tinnitus. This tinnitus, as well as the deafness, has gradually become worse, until it is now almost unbearable, especially at night—a restful night being almost impossible. He does not have any tinnitus in the left ear, but thinks the hearing is not as good as it might be.

The watch is not heard by the right ear. The snapping of finger-nails is heard at one and one-half inches distant. The watch is heard by the left ear at a distance of six inches. The tuning-fork is heard by both ears, better by bone-conduction than by aërial conduction. With the tuning-fork placed upon the teeth or cranial vertex, in the median line, it was heard equally well by both ears. The right ear heard the tuning-fork by bone-conduction twenty-seven seconds, and ten seconds by aërial conduction. In the left ear the time was eighteen seconds by bone-conduction, and thirty-two seconds by aërial conduction. The throat and nose are in fair condition.

Both ears were treated by the introduction of camphor and iodin vapor through the Eustachian catheter into the middle ears; moving the drum-head and ossicles by the use of Siegle's otoscope; and by politzerization. An application of compound tincture of iodin and glycerin, equal parts, was made to the post-nasal space. This treatment was, for two

months, faithfully carried out each day, with the introduction of the Eustachian bougie every third day. There was no improvement of the right ear. The hearing improved in the left ear to twelve inches for the watch.

I advised removal of the drum-head and ossicles of the right ear, to relieve the tinnitus, which was so distressing that he was able to sleep but little.

On March 28th I removed the drum-head, the malleus, and the incus bones. (In all these cases I have left the stapes intact, disarticulating it from the incus before removing the latter.) The healing was slow, there being considerable muco-purulent discharge for two weeks, when the drum-head began to heal over very rapidly. Its edges were touched with trichloracetic acid several times, which produced considerable reaction. The tympanum filled with granulations, which were destroyed with chromic acid. From this time on the progress was rapid, the tympanum soon becoming white and dry, with a good hole in the drum-head.

Hearing for the watch was increased from nothing to contact, and for the snapping of finger-nails from one and one-half inches to twenty inches. The voice before the operation could not be heard, except as a jumbled noise, but after the operation a conversation could be carried on at a distance of one foot. Tinnitus was only partially relieved. I saw him last about June 1st. It is possible he may be still more relieved of the tinnitus by this time, but I am sorry to say I have lost track of him, and, in consequence, cannot say.

E. W. P., aged fifty-nine, came to me March 3, 1892. He thinks the trouble in his right ear dates back about thirty years, and in the left about twenty years. Thirteen years ago he was under the care of Dr. Jones, of Chicago, for several weeks, and nine years ago was treated by the late Dr. Wilson, of this city, for about a year. The benefit received from previous treatment was very slight and only temporary. He has had no tinnitus for three years. Hearing is much better in a noisy place. He has never had any discharge from the ears.

The watch is not heard by either ear. Snapping of the finger-nails is not heard by the right ear, but at a distance of one inch by the left ear. The voice is heard only as a jumbled sound by the right, conversation at a distance of two inches by the left. The tuning-fork is heard better by bone-conduction. The drum-heads are sunken and very opaque, and without a light-spot.

I told him that treatment would be of no value, and that removal of the drum-head and ossicles might benefit him slightly. I suggested a trial on the right ear, and, if the improvement was enough to amount to anything, to have the left ear operated upon.

Under chloroform-anesthesia, the drum-head, malleus, and incus were removed. The healing process went on nicely, no special amount of reaction following the operation. A muco-purulent discharge continued for about two weeks, when the drum-head showed a tendency to heal over. To prevent this I touched the edges of the perforation with trichloracetic acid. This produced some reaction and additional discharge. It was necessary to repeat the application of the acid several times before a permanent opening in the drum-head was established.

By May 15th, the tympanum was dry and white, with a good hole existing in the drum-head. The improvement in hearing was not great, yet it was something. He hears the snapping of finger-nails at a distance of one and one-half inches. This sound could not be heard at all before the operation. A conversation can now be carried on in a moderate tone of voice at one-inch distance. There has been no change in his hearing from May 15th to the present writing.

A PATHOLOGIC CLASSIFICATION OF HIP-DISEASE.

BY JAMES K. YOUNG, M.D.,
OF PHILADELPHIA,
INSTRUCTOR IN ORTHOPEDIC SURGERY, UNIVERSITY OF PENNSYLVANIA; ATTENDING SURGEON, ORTHOPEDIC DEPARTMENT, UNIVERSITY HOSPITAL, ETC.

THE pathology of tuberculous joint-diseases has received so much attention of late that a practical classification of hip-disease upon a pathologic basis is now feasible and should prove of the greatest clinical value.

So far as I know, no attempt has been made to formulate, upon a purely pathologic basis, the different types of the disease as seen clinically. All former classifications have been upon an anatomic or symptomatic basis.

Some writers, as Ashhurst,[1] have made an anatomic division into femoral, acetabular, and arthritic coxalgia; while others, as Gibney,[2] place all the varieties under one general title of chronic osteitis of the hip-joint, and Lannelongue,[3] under that of coxotuberculosis. The clinical classification of Lovett[4] is the most comprehensive, and, while not purely pathologic, rests upon a pathologic basis.

Four well-marked types are given: (1) the destructive; (2) the painful; (3) the quiet or painless; and (4) the transient or ephemeral forms; each of which, he says, corresponds to a peculiar type of the pathologic process. To this article I am indebted for much valuable information in the preparation of this paper.

In discussing this paper before the Orthopedic Association, Roswell Park[5] suggested a classification into a chronic, a fibroid, a septic-infectious (pyogenic), and a mixed form.

My object is to offer a classification upon a pathologic basis, illustrated by clinical facts, and intended to show that the tuberculous process in the hip-joint is identical with the tuberculous process in

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[1] Pract. of Surgery, 2d ed., p. 588.
[2] Diseases of the Hip, p. 170.
[3] Coxotuberculose, p. 3.
[4] Bost. Med. and Surg. Journ., Oct. 13, 1892.
[5] Trans. Amer. Orthop. Assoc., p. 68.

the lungs, and that the pathologic classification adopted by clinicians to describe pulmonary tuberculosis is best suited to the use of surgeons in their study of tuberculosis of the hip-joint.

Such a classification is of the greatest importance, for upon it depends the early adoption of appropriate treatment. If, moreover, the different types could be early recognized, much valuable time and many useful lives might be saved. If, for example, a tuberculous synovitis of the fibroid type be early recognized, conservative treatment might be instituted and a resection be positively avoided; or, if the destructive nature of the acute tuberculous type be early recognized, the prospects of recovery would be enhanced by early resort to a typical or atypical resection.

Pathology is the basis of clinical surgical diagnosis, and a classification upon this basis is not only feasible but highly essential to the proper study of this interesting morbid affection. Clinical surgical pathology gives us the cue to the lesions which are associated with the various symptoms. It is not sufficient to diagnosticate a chronic tuberculous osteitis of the hip-joint; the anatomic structures involved should if possible be ascertained, and also the type of the disease.

From careful study, extended research, and clinical observation I am convinced that the best results in the pathology of hip-disease will be accomplished by a comparison with the analogous lesion that occurs in the pulmonary organs; and if this presentation of the subject lighten the labor of students in acquiring a knowledge of this affection, or if it serve others in a more accurate study of this disease, the object for which it was written will have been accomplished.

Clinical observations show that hip-disease has three modes of origin: In the head of the femur, the acetabulum, or in the structures of the joint, the synovial membrane, ligamentum teres, or the cartilage lining the acetabulum or covering the head of the femur, *i. e.*, a femoral, acetabular, or arthritic origin. It exhibits itself in three different groups: (1) the acute tuberculous form (miliary); (2) the chronic ulcerative form; and (3) the chronic tuberculous form (fibroid), corresponding with the manifestations of tuberculosis in the lungs, the acute miliary tuberculosis, chronic ulcerative, and fibroid phthisis, respectively.

Origin:

1. Arthritic.
2. Femoral.
3. Acetabular.

Types:

1. Acute tuberculous form (miliary).
2. Chronic ulcerative form (pyogenic-miliary).
3. Chronic tuberculous form (fibroid).

The primary osseous origin of hip-disease has been fairly established for some time, though authors differ greatly as to the relative frequency of femoral and acetabular osteitis. The primary origin in the synovial membrane and ligamentum teres has, in my opinion, been established since the report of the well-known case of Willard and Shakespeare,[1] notwithstanding the criticism made by Gibney, that the patient had been under efficient treatment and the osseous changes may have been retrogressing.[2] If any doubt exists as to primary synovial tuberculosis, or primary tuberculous chondritis, a careful perusal of Senn's[3] recent magnificent contribution to clinical surgical pathology should dissipate it.

According to the mode of infection there are two distinct forms of initial lesion, the osseous and the synovial.

a. When the bacilli, through trauma of the osseous structures, become localized in the head of the femur or in the acetabulum, the rapid proliferation of cell-division proceeds, and produces in a few days gray miliary nodules. According as the number of bacilli is large or small, and the tissue-soil favorable or unfavorable, will be the development either of a general or a localized tuberculosis, and the ultimate termination of the process, whether of caseation, ulceration and destruction, or sclerosis, constriction, and healing.

b. When tubercle-bacilli, through trauma of or invasion by extension into the soft structures, become localized in the synovial membrane or the round ligament, or are absorbed by the cartilage from the perichondrial bloodvessels, the aspect differs. The synovial membrane becomes rapidly and extensively affected; the process is not confined to a constricted area, but has a more general distribution, and may involve the greater part of the synovial membrane or the entire articulation. In this mode of infection we see the characteristic *fungous synovitis* and the areas of the so-called pedunculated papillomatous growths. These growths, with caseation, ulceration, and abscess-formation on the one hand, and sclerosis and limitation on the other, make up a comprehensive picture of chronic tuberculous osteitis.

These being the tendencies of the tuberculous processes, either toward destruction or healing, the ultimate result will depend upon the ability of the tissues to restrict and limit the development of the bacilli. As Osler[4] has aptly put it: "There are tissue-soils in which the bacilli are, in all probability, killed at once—*the seed has fallen by the way-*

[1] Agnew's Surgery, vol. ii, p. 168.
[2] Boston Med. and Surg. Journ., 1880.
[3] Senn: Tuberculosis of Bones and Joints, 1892, pp. 132 and 147.
[4] Practice of Medicine, 1892, p. 196.

side. There are others in which a lodgment is gained, and more or less damage done; but, finally, the day is with the conservative, protecting forces—*the seed has fallen upon stony ground.* Thirdly. there are tissue-soils in which the bacilli grow luxuriantly; caseation and softening, not limitation and sclerosis, prevail, and the day is with the invaders—*the seed has fallen upon good ground.*"

The *acute tuberculous* form is a destructive form of hip-disease, due to a florid tuberculosis of bone or synovial membrane, and rapidly fatal from tuberculous meningitis.

The *chronic ulcerative* form is the ordinary form of hip-disease. Tuberculous from the first, it becomes ultimately a septic-infectious form from the formation of numerous abscesses and the presence of the streptococci and staphylococci aurei. It frequently terminates fatally from albuminoid degeneration.

The *chronic tuberculous* form is a slow, painless form, with little tendency to abscess-formation, and tending toward a spontaneous cure.

1. *The Acute Tuberculous Form.*—This type of hip disease is the analogue of acute pneumonic tuberculosis, commonly known as galloping consumption. It occurs in both children and young adults, with inherited tendency and slight resistance. Two types may be recognized—a synovial and an osteitic.

a. In the synovial variety the onset is abrupt and acute, and usually in an individual who has previously enjoyed good health, although in many cases there may be a history of exposure to cold or traumatism. If the fungous granulations are scanty there is copious effusion, *tuberculous hydrops*, marked fluctuation, slight deformity, severe pain, and normal temperature. The condition may terminate at this stage or may become a fungous synovitis.

If granulation-tissue be abundant, there is little or no effusion in the joint, slight or no fluctuation, extensive deformity, without much suffering, and with slight fluctuations of temperature from the norm. Suppuration may occur in the granulations, and pus may accumulate in the joint until the capsule is ruptured and general infection occurs, or a spontaneous or artificial opening exposes the individual to infection with pus-microbes from without, with rapid impairment of the general condition, pyrexia, hectic, and progressive anemia and emaciation.

b. In the osteitic variety the commencement is likewise sudden in persons debilitated from acute infectious diseases, or from any cause. Pain initiates the attack, and is a prominent symptom throughout the disease. Localized tenderness on pressure is early present, and is one of the most positive indications of osteo-tuberculosis. There is little swelling or edema, until the para-periosteal structures become infected. Then the para-articular tissues become markedly indurated, and abscess-formation rapidly occurs. Muscular spasm, deformity, and atrophy are extreme. The pyrexia runs high, and the general condition rapidly deteriorates. The destruction is rapid, and death may occur from exhaustion, tuberculous meningitis, or, if the disease drags itself into the chronic ulcerative form, from amyloid degeneration.

While the disease is confined to the articular structures, it is a pure, florid, rapid tuberculosis; but when ruptured abscesses and sinuses expose an exquisitely prepared tissue-soil to atmospheric infection, suppurative microbes inaugurate a local septic process, and finally a pyemia.

2. *The Chronic Ulcerative Form.*—Under this heading may be grouped the great majority of cases of hip-tuberculosis in which the lesions proceed to ulceration and softening, and ultimately produce the well-known picture of chronic hip-disease.

A purely tuberculous affection from the first, it ultimately becomes in many cases a mixed disease, many of the most prominent symptoms of which are due to purulent cavities and septic infection. The initial lesion in the majority of instances is an osseous one, either in the epiphysis of the femur or in the acetabulum, in the majority of the cases being, in my opinion, in the former situation, notwithstanding Habern's statistics.[1]

The onset is gradual, and its progress is characterized by three well-marked stages: the first, from the onset to the formation of pus within the joint; second, from the end of the first until pus appears outside the joint; and third, from the second to the end, the period of *flexion*, *abduction* and of *adduction*, or *shortening*, respectively, which is practically identical with the division of Adams and Wright.

Pain, muscular spasm, atrophy, lameness, malposition of limb, induration about the trochanter, changes in the outline of the region of the hip, lordosis of the lumbar spine, are all well marked and characteristic. Muscular spasm, and night-cries or pains, are prominent symptoms of this variety. Indeed, this variety may be said to correspond to the painful form of other writers. Suppuration occurs in a large proportion of these cases, the relative frequency being much modified by appropriate treatment.

Exacerbations are common, and, but for exhaustion from prolonged suppuration, the prognosis of a favorable termination is better than in the former variety, or in some instances of the type about to be described.

3. *The Chronic Tuberculous Form.*—This group includes a class of cases which, while not common, are sufficiently numerous to form a well-recognizable type. The onset is gradual, and the progress

[1] Cent. f. Chir., April 2, 1881.

of the disease slow. Muscular spasm is an early and constant symptom, fixing the limb rigidly in the majority of instances. In a few, particularly when there has been much shortening, there may be great mobility without pain.

The local sensibility is not increased, and pain as an important symptom is absent. Night-cries may be present, but are insignificant. Muscular atrophy and shortening are the prominent characteristics. Abscesses seldom occur, but when present are accompanied by extreme shortening of the limb, and in some instances entire destruction of the head of the femur. The tendency is toward recovery, with great shortening, extreme atrophy, and firm, fibrous ankylosis.

This form may come on gradually as a sequence of a chronic ulcerative tuberculosis or a tuberculous synovitis. The condition is one of sclerosis and induration, with gradual shrinkage, from the superabundance of fibrous tissue, the tendency of the pathologic process being conservative and healing. If the initial lesion be in the synovial membrane, effusion is slight, granulations are scanty, but fibrous ankylosis is marked and extreme; if in the osseous structure, the limitation of the tuberculous foci is effected by a condensing osteitis, and the tendency to purulent degeneration is reduced to a minimum. When pain or night-cries occur, they are usually due to involvement of the synovial membrane by the extension of the disease from the epiphysis.

These three groups include all cases of true hip-disease. Several forms of arthritis have been placed under this title which do not, in my opinion, belong there. Acute arthritis in infants and acute pyogenic arthritis in adults from typhoid fever, sepsis, etc., do not naturally belong in this category.

The transient or ephemeral form, of which I have observed a few instances since attention was attracted to the subject by the interesting observations of Lovett and Morse[1] appears to me to include cases of the acute tuberculous form which have rapidly and spontaneously recovered. I have now two such cases of the acute tuberculous form under observation, in which all the symptoms have entirely disappeared.

Exothyropexy is the name proposed to designate an operation in which the thyroid gland is freed as thoroughly as possible from surrounding parts and brought forward through the external wound, being permitted to undergo atrophy. It has been performed by JABOULAY (*Lyon Médical*, an. xxv, t. lxxii, No. 11, p. 380) in the case of a young man of fifteen years, with a goiter that threatened suffocation, and in which entire removal of the gland was not permissible.

[1] R. W. Lovett and J. L. Morse: "A Transient or Ephemeral Form of Hip-disease," Bost. Med. and Surg. Jour., Aug. 18, 1892.

CLINICAL LECTURE.

REMARKS ON A CASE OF TUBAL PREGNANCY.

BY WILLIAM GOODELL, A.M., M.D.,
PROFESSOR OF GYNECOLOGY, UNIVERSITY OF PENNSYLVANIA, ETC., PHILADELPHIA.

I AM going to take our patient with extra-uterine fetation, upon whom I operated a week ago before you, as a text for some remarks, which I was unable to make at the time of operation. As the operation was a critical one, it engaged all my attention, and I could not give you at that time a coherent lecture on a very important subject.

Let me say, however, before going further, that she has made an uninterrupted recovery; and notwithstanding the large cavity from which a dead child at full term was extracted, and which communicated with the abdominal cavity, no symptoms of blood-poisoning set in. I put in a piece of iodoform-gauze as large as a pocket-handkerchief, which was partly removed at the end of the fourth day, and the rest on the fifth day, when a drainage-tube was inserted. This has been reduced gradually, until now it is only two inches in length, and there will be cut off from it to-day another half-inch, which shows how much the cavity has filled up. A drainage-tube should never touch bottom in abdominal work, else it may ulcerate through the rectum or through any other bowel on which it rests. The cavity is only about two inches deep, and it apparently has been filled up laterally by the processes of nature. There is scarcely any color to the secretion, and although there is no doubt some pus, it is so little as not to be visible.

Her case, then, will be my text. The late Dr. Formad, who was Coronor's Physician, had in the course of four years over thirty cases of autopsy on women who had died suddenly. There would be the history of a woman washing at the tub, or cooking, or lifting some weight, when suddenly she was seized with pain in the abdomen, followed by collapse, in which she would die. At the inquest there was found in all of these cases tubal pregnancy with rupture of the tube. At about the eighth week any slight strain will rupture the pregnant tube. One of my patients had just got out of bed, and was lacing her shoe, when she had severe abdominal pain and collapse. A hurried abdominal section saved her life.

Let us begin at the beginning. The usual history is this: A woman has been married for a long time without conceiving. For instance, our patient had been married seven years, and this was her first conception. Or a woman has given birth to one or two children, then remains sterile for a number of years before she conceives again. That is the usual history, but there are exceptions.

What are the symptoms? A woman will usually miss a monthly period, and on that account deem herself pregnant. Then other symptoms will set in which will confirm her in that opinion, such as enlargement of the breasts, the usual changes in their areolæ, and nausea. But after the lapse of a few weeks colicky pains come on, an irregular hemorrhage takes place, a decidual cast is thrown off from the womb, and she will think, and her physician also, that she has had a miscarriage.

Why is this? It is because the womb, sympathizing, when tubal impregnation occurs, forms a decidua, and always enlarges. The decidua is sometimes cast off as a whole, or it may come away in large pieces, or, still more frequently, in shreds. A few days later, while engaged in any household duty demanding some muscular strain, she is seized with violent pain and collapse, and her physician is sent for. Believing the case to be one of cramp-colic, he gives her morphine, etc., yet to his surprise she gets no better, and dies. Sometimes these attacks are repeated before a fatal collapse takes place. I should say, then, that the most common symptoms of extra-uterine pregnancy are, first, the missing of a monthly period; second, severe colicky pains; third, irregular hemorrhages. Irregular flows of blood when the woman is supposed to be pregnant, would always lead me to think that something wrong is going on.

Now, as to the cause of extra-uterine fetation. To answer this question we must ask another one. Where is the egg fecundated? Is it inseminated in the womb; is it fecundated in the tube, or is it fructified in the ovary? These are difficult questions to answer. But I should judge from the evidence on this point, that the ovum is usually fecundated either just as it is about to escape from the ovary, or while in the oviduct on its way to the womb. For just as soon as the ovum is fecundated preparations are apparently made beforehand by the womb for its reception. In the tubes there is ciliated epithelium, little hair-like projections, which are always waving to and fro. The spermatozoa have their own independent movement, and can wiggle up to the ovum and impregnate it; but the ovum has no independent means of locomotion, and depends on the movement of the cilia to carry it to the womb. The ovum, so to speak, is tossed from one cilium to another, as a foot-ball is tossed from one player to another, and thus is conveyed from the ovary to the womb. But suppose the woman has had a catarrh of the tube, a salpingitis, due to gonorrhea or to some other cause. It then becomes denuded of its cilia; the mucous membrane grows thick and unyielding, and consequently the spermatozoa may wiggle their way to the ovum and fructify it, but the latter then cannot get to the womb. Hence it stays in the tube, and there develops.

Now arises another difficult question. Is the ovum ever fecundated in the ovary itself—in other words, do we ever have ovarian pregnancy? This is one of the moot questions of the day. There are a few specimens that seem to confirm the theory of such an origin. It would appear that just as the ovisac had burst, and the ovum was ready to escape, it may have been fecundated and fixed there, the ovary becoming its nest. There are two or three such specimens, but they are not conclusive, and the general opinion is against ovarian pregnancy.

What is the history of tubal pregnancy? For we now call it tubal pregnancy, instead of extra-uterine pregnancy, as we did when we thought the ovum might become impregnated in the ovary or in the wall itself of the uterus—tubal, whether the ovum is outside of the womb, or is interstitial, because it tells the story of tubal origin. Now, this tube is small and its growth does not keep pace with that of the ovum; so that usually at the sixth or eighth week it bursts, and the result depends upon where it bursts. Suppose my arm stretched out horizontally to be the tube, and this towel hanging over it to represent the broad ligament. Now, if the tube bursts above in its free portion, where the peritoneum, represented by this towel, is closely applied, there is nothing to prevent fatal hemorrhage taking place into the cavity of the abdomen, for there is nothing to stop it, unless the opening becomes corked by a fibrinous clot, or by a piece of placenta. Yet, this accidental arrest is rare, and the most common result is a fatal hemorrhage, unless we interfere, and that most promptly. But if it bursts below, between the two folds of this towel, *i. e.*, of the broad ligament, the blood escapes into a shut sac, and the hemorrhage cannot exceed the capacity of this sac. The blood for a certain distance will dissect apart the folds of the broad ligament, even down to and around the rectum, but no further. These are the cases in which the child may go on to term. The child escapes into the broad ligament, where it usually soon dies, but sometimes it lives and goes on to term. It is sometimes very important to decide whether the tube has ruptured on its free surface, and the blood is flowing unchecked into the abdominal cavity; or whether it has ruptured into the closed sac of the broad ligament where the hemorrhage will soon be controlled. This information can generally be gained by a rectal examination, which will show a constricting ring when the broad ligament is involved.

What is the after-history of these cases? If the woman is allowed to bleed on indefinitely, of course she dies. If she has a physician who, keenly alive to her dangerous condition, will at once make an abdominal section, ligate the tube and remove it, she will most probably get well. Her chances are excellent unless she is moribund, and even then it is our duty to perform the operation, for women apparently dying from the loss of blood have been saved. It is only within the last few years that we have been acquainted with the pathology of ectopic pregnancy, and have been awakened to our duty.

What is the history if the child dies, and the little tear in the tube is closed up by a clot, which arrests the hemorrhage? The placenta, strange as it may seem, often goes on growing, even when the child is dead, and there may be a second rupture of the tube from this growth, followed by a fatal hemorrhage. Therefore, in all suspected cases of tubal gestation, one should operate. As a broad rule, when a physician examines a woman, and finds on one side of the womb a tumor disconnected from the womb, and if in the series of symptoms there is a suspicion of extra-uterine fetation, it is his duty, if the woman's life is in danger, to make an exploratory incision.

What happens when the child does not die, but lives? For sometimes, as in our case, the child will survive the rupture of the tube, live, and go to term. The abdominal pains cease, and the symptoms will be those of a natural pregnancy. The placenta, however, becomes unnaturally large, so as to compensate for its less vascular site. In natural pregnancy the placenta has a limited area, because it is lodged on an erectile tissue largely supplied with sinuses. But when the placenta is ectopic—that is to say, out of its proper place in the womb—it is lodged on tissues non-erectile and less vas-

cular than those of the womb. Hence, it spreads over a larger area of surface, which, not being contractile, causes a terrible hemorrhage when efforts are made to remove it after a celiotomy. In our own case, although the child had died six months ago, the placenta was very large.

Now, what happens to the child? It lives until it reaches the natural period of utero-gestation—viz., nine months—and then it dies. Why it dies then is a mystery. One of the early physicians who flourished some 400 years ago, on being asked what brought on labor at the end of nine months, replied: "The grace of God." He didn't know why, and neither do we, with all our accumulated science. We have our theories—we may say that the womb cannot increase any more—but how is it that the child outside of the womb dies at about the ninth month? That's a poser; we don't know.

What occurs on its death? Of course, all fetal movements cease, and very generally the woman's health begins to fail from chronic septicemia. This comes from the absorption of the liquor amnii, which becomes, if not exactly putrid, at least necrotic, and, therefore, septic. She loses flesh, and slight fever sets in, hectic in type. She may waste slowly away, or she may get over it and recover her health, as our patient did. This depends on what happens to the fetus. If the fetus becomes putrid, the woman may die in a few days, or an immense abscess may form in the sac, with recovery at last. Sometimes the fetus is converted into adipocere, and remains innocuous in the woman's belly for many years. This adipocere is not unlike that of bodies buried in certain soils. We have such a graveyard in Philadelphia. Bodies buried in it, in a few years become converted into adipocere, and do not decompose. One of these bodies is now preserved in the College of Physicians.

Sometimes the fetus is converted into a lithopedion—which means a stone-child. There is a curious and unaccountable tendency of uterine bodies to become calcareous. For instance, an interstitial fibroid tumor of the womb may undergo calcareous degeneration, and be converted in time into a species of stone, very like brain-coral. Again, you will not have been in practice a year before you will deliver a placenta gritty with concretions of lime. Sometimes this calcareous deposit is so great as to detach the placenta, causing hemorrhage and miscarriage, just as from fatty degeneration of the placenta. Then, again, a lithopedion may occur after a missed labor. This usually happens when the womb is bicornate, pregnancy taking place in one horn, or it may be in both horns. The child in one horn may be retained and never be delivered. It then is liable to be converted into stone.

A child can never be born whole, in case of extra-uterine fetation, without the intervention of the surgeon. I say *whole*, because it may be spontaneously discharged piecemeal through the formation of an abscess. But before describing the operation, let me go back and ask whether we can destroy the life of the ovum safely without the knife? The burning question for the last few years has been this: A tubal pregnancy having been diagnosticated, are there any means by which we can destroy the fetus in the first few weeks of its existence, and thus prevent rupture and its accompanying hemorrhages? Electricity has its advocates. I have no doubt whatever that electricity has accomplished this; and my advice to those of you who are not surgeons, and who cannot get the patient to a surgeon, is to try electricity, and see whether you can, either by the galvanic or by strong interrupted currents, destroy the life of the fetus. Such cases have been reported. The only doubt that has arisen is as to the accuracy of the diagnosis; but I feel confident that some of the cases were *bona fide* cases of tubal pregnancy, as the judgment of those reporting them cannot be doubted. In those cases not only was the fetus killed, but the growth of the placenta was arrested, by the galvanic current. So, if anyone near and dear to me had extra-uterine pregnancy, while I would prefer infinitely the use of the knife, yet I should place electricity second to the knife.

The objection to electricity is this: suppose you destroy the life of the fetus; the ovum may break down and give rise to the formation of an abscess, which is a dangerous complication. Again, if you destroy the life of the fetus, you leave a foreign body in that tube, which will become adherent to the ovary on that side. The woman then has all the discomforts of an adherent appendage, and she most likely will never be a sound and healthy woman afterward.

An effort has been made to destroy the child by the removal of the liquor amnii, or by the injection of morphine, or of other poisonous substances into the sac; but the results have proved far from being satisfactory, and many fatal cases have been reported. I recall a case some fifteen years ago, in which I made a diagnosis of extra-uterine fetation. I punctured the sac *per vaginam* with the smallest aspirator needle, in order to remove the liquor amnii, yet upon the withdrawal of this delicate instrument so much blood came from the puncture that I had to catch the bleeding-point with the forceps, and to wait some time before the hemorrhage was arrested. From this slight operation septicemia set in, and the woman died a few days after. So gynecologists have given up the use of abortive agents, excepting the knife and electricity. Of the two, I prefer the former, but there is good warrant for the abortive use of electricity.

In the case I had before you, the conception took place in the left tube, which probably burst into the corresponding broad ligament. There the fetus grew, until finally the sac formed out of the broad ligament also burst, and the buttocks of the child came in contact with the omentum and the intestines—at least, so I found them at the time of the operation. It is always best to remove, if possible, the whole sac; but in this case this procedure was unwarrantable, on account of the firm adhesions. Had the sac been whole I should have attached its mouth to the abdominal wound, and have put into it merely a drainage-tube. But as its upper portion had burst, and its cavity communicated with that of the abdomen, I stuffed it with a large piece of iodoform-gauze, which was gradually withdrawn from day to day.

As the child had been dead for six months, the placenta had become detached and shrivelled. Consequently it was easily removed, and without hazard. But when the child is living, or the placental circulation is still active, the detachment and removal of the after-birth is a most formidable undertaking, on account of

the fearful hemorrhage. This is due to the large size of the placenta, and to the absence of contractile tissue in its site. The sinuses are therefore more numerous than in the uterus, and, as contractility is absent, they bleed without stint. The serious question then in such cases is how to deal with the placenta. Its removal may give rise to fatal hemorrhage. Left *in situ* to come away piecemeal by decomposition, it invites blood-poisoning. The rule, therefore, is to remove, if possible, the whole sac, and with it, of course, the placenta. This can occasionally be done by slow and careful enucleation, and by the aid of many ligatures. Another method is not to remove the whole sac, but to cut off, by quilted and cobbler's sutures under it, the circulation of the placental site, and then to detach the placenta. But most commonly the placenta has to be left behind, to be thrown off by the natural process of decay. To avoid as much as possible the danger of septicemia, the mouth of the sac is stitched to the abdominal incision, and the most efficient drainage by iodoform-gauze established.

CLINICAL MEMORANDUM.

A CASE OF SUFFOCATIVE LARYNGO-TRACHEITIS, AND A METHOD OF IMMEDIATE RELIEF.

By EDWIN J. KUH, M.D.,
of Chicago, Illinois.

In illustration of an additional indication for the method described in my article, "A Topical Treatment of Bronchitis" (The Medical News, March 11, 1893, p. 267), I wish to describe the following case:

Mrs. L. L. attended a ball shortly after her return from a wedding trip to the South. The next day I found her suffering from what seemed to be an ordinary laryngo-tracheitis. On the succeeding morning I was again called, finding the conditions greatly changed. She had been awake all night suffering from an attack of "croup," but as this was to her a familiar reminiscence of childhood, she was more amused at the experience than alarmed at the distress.

I found her with accelerated and stridulous respiration and cyanotic face. There was a gurgling sound of advancing and receding mucus in the windpipe. Occasionally the mucus would become so lodged as to suppress respiration altogether; she would then struggle violently to regain her breath. The temperature was 101°. The pharynx was almost normal. The superior aperture of the larynx was swollen and congested, and the glottis was covered with a sticky yellow-greenish secretion. Upon inspiration the tracheal mucosa presented itself swollen and with engorged capillarles; thick bands of a very tenacious, green discharge stretched across the trachea, almost blocking it up.

During the previous night the patient had vomited several times. I again forced vomiting, and in various ways succeeded in giving transitory relief, but the secretions would again gather. During the forty minutes consumed in these observations the patient had several attacks of suffocation, each seeming more severe than that preceding.

In view of my experience in the rapid elimination of bronchial secretions (see the article quoted), I then decided to apply the deep spray. The success of its application was as rapid and striking as we see it in intubation on for laryngeal stenosis. Each inhalation of the spray was followed by the ejection of the tenacious, cohesive discharge, which was so adherent to the mucous membrane as to carry away small quantities of blood at each expectoration.

The patient was then put back to bed, entirely relieved of dyspnea, and sank into a sleep of exhaustion. Recovery took place without further incident, except that the sputa remained bloody for a few days.

MEDICAL PROGRESS.

Congenital Ptosis with Synchronous Movements of the Affected Lid and the Lower Jaw.—Hubbell (*Archives of Ophthalmology*, xxii, 1, p. 65) has reported the case of a well-developed, healthy, and intelligent boy, seven years old, in which a short time after birth it was observed that the right eyelid failed to open in association with the left, but remained closed except when the mouth was opened. It was possible, however, to keep the right eye closed while the mouth was open. The two eyes were of the same size, the pupils were normal in size, and the irides of the same color and normal in appearance and reflexes. There was marked divergent strabismus, with some downward deviation. The right eye could not be turned upward beyond the median plane or inward but little beyond the vertical plane; downward and outward, however, its movements were of usual extent. On ophthalmoscopic examination both eyes were found to be emmetropic. The fundus was normal on both sides. Vision was normal on the left, but it was barely possible to count fingers at the distance of four feet with the right eye. In explanation of the anomaly it is suggested that the origin of the fibers supplying the levator palpebræ had been transferred from the nucleus of the third nerve to that part of the nucleus of the fifth that sends fibers to the anterior belly of the digastric muscle. The nucleus of the third nerve seems to have been undeveloped in that portion from which arise the fibers supplying the levator of the upper lid, the superior rectus, and the internal rectus muscles, while that part sending fibers to the inferior rectus (possibly the inferior oblique) and the iris was normally present.

Aural Vertigo in Children.—Lannois (*Le Mercredi Médical*, 1893, No. 11, p. 129) maintains that aural vertigo may appear in children either as a transitory epiphenomenon or as a manifestation of an acute lesion of the auditory apparatus; recurring, however, at intervals of varying duration, in association with chronic disease of the ear, it is much more rare in children than in adults. He reports four cases. One was in a child of seven that had measles and whooping-cough at two, followed by chronic otitis media. The second case was in a child that had, for eighteen months, suffered with vertigo and vomiting, and that presented cicatricial adhesion between the tympanic membrance and the handle of the malleus. The third case was in a child of seven that had scarlatina two years previously, and thereafter the symptoms of aural vertigo. The fourth case was in a

child of eight that suffered some impairment of hearing after a fall at the age of five, and that presented symptoms of aural vertigo for fifteen months following an attack of influenza. Attention is called to the possibility of mistaking the attacks for those of epilepsy, but the loss of consciousness in the one condition and the occurrence of vomiting in the other should be distinctive. Of sixty deaf-mutes, but six presented vertigo and nausea. Children who still heard a little seemed more liable than those that were entirely deaf.

Disinfection by High Temperature.—DR. ADOLF HEIDER (*Arch. f. Hygiene*, vol. xv, No. 4), of the Department of Hygiene at the University of Vienna, has published some observations on the increased efficiency of disinfecting agents at high temperature. He experimented with phenol, cresol, and their sulphonic acids, sodium and potassium hydroxids and carbonates and sulphuric acid. The bacillus anthracis and the micrococcus pyogenes aureus were employed as test microbes. Heider found, as might be expected, a decided increase in germicidal action at temperatures of 130° F. and 165° F., as compared with the effects of the same agents at ordinary temperatures. He points out the practicability and advantage of using solutions of these disinfecting agents in water, by which means microbes can be completely destroyed at temperatures much below the boiling-point of water and more quickly than with water alone.

Heider suggests that in cases of infectious diseases, a covered boiler, containing the disinfecting solution, should be placed in the sick-room, and bed-linen and similar articles placed in it as soon as they are put aside to be washed. When the boiler is filled it can be placed on the fire and heated for a brief period to boiling, and efficient disinfection will have been accomplished.

The Etiology of Measles, Smallpox, Scarlatina, and Syphilis.—DOEHLE (*Centralbl. f. Bakteriologie u. Parasitenk.*, xii, 25, p. 907) makes a preliminary illustrated report of the results of a biologic study of the etiology of measles, scarlatina, smallpox, and syphilis, in each of which he describes the presence of one or more protozoa to which he attributes specific etiologic properties.

THERAPEUTIC NOTES.

Tolypyrin, or paratolydimethylpyrazolon, $C_{12}H_{14}N_2O$, is a synthetic product, chemically allied to antipyrin, than which, however, it has by GUTTMANN (*Berliner klin. Wochenschr.*, xxx, 11, p. 249) been found to possess more active therapeutic properties. It forms colorless crystals, melting at 276.8° or 278.6°, having a bitter taste, being soluble in ten parts of water, readily taken up by alcohol, and almost insoluble in ether. It was found that 60 grains of tolypyrin, given in four equal parts at intervals of an hour, were capable of lowering febrile temperature at least 2.7°, and often more. The decline began, with sweating, within an hour of the first dose, and was progressive, reaching the maximum in the course of five or six hours. Then the temperature slowly again rose, however, without chill, the therapeutic effect remaining appreciable for from twelve to eighteen hours. In recent cases of acute articular rheumatism of mild type the administration of 60 grains of tolypyrin daily in doses of 15 grains every three hours, was attended with decided benefit, the action being entirely comparable with that of antipyrin and that of salicylic acid. The agent also proved useful in the relief of headache of neuralgic origin.

Tolysal, paratolydimethylpyrazolon salicylate, $C_{12}H_{14}N_2O.C_7H_6O_3$, is a new product of the laboratory, occurring in small, faintly-pink crystals, of bitter taste, melting at a temperature between 213.8° and 215.6°, and being slightly soluble in water, with difficulty soluble in ether, and readily soluble in alcohol and acetic ether. HENNIG (*Deutsche medicin. Wochenschr.*, xix, 8, p. 193) has made a clinical study of the therapeutic utility of tolysal, and finds that in doses of from 60 to 120 grains in divided doses, at intervals of from half an hour to an hour, in the course of the latter half of the day, it is extremely useful as an antipyretic, an antineuralgic, and an antirheumatic. The decline of temperature is associated with a lowering of the blood-pressure, but without any unpleasant complication.

The Treatment of Writer's Cramp.—BENEDICT has relieved a case of writer's cramp by injecting carbolic acid in the neighborhood of a sensitive point in the course of one of the flexor tendons of the related forearm. LANGES (*Münch. med. Wochenschr.*) has succeeded in overcoming writer's cramp by having the pen held between the second and third fingers in such a way that the holder rests upon the latter at an angle of from 110° to 135°, while it is supported below by the thumb, the index finger resting lightly above.—*Corr.-bl. f. Schw. Aerzte*, xxiii, 6, p. 256.

Camphoid, a Substitute for Collodion.—

℞.—Camphor, Alcohol } . . . . . āā 20 parts.
Pyroxylin . . . . . 1 part.—M.

℞.—Camphor, Alcohol, absolute } . . āā 20 parts.
Pyroxylin . . . . . 1 part.
Iodoform . . . . . 4 parts.—M.

Pharmaceut. Ztg., 1892, No. 31.

For Singultus.—FESSLER (*Corr.-bl. f. Schw. Aerzte*, xxiii, 6, p. 225) recommends that the pharynx be irritated until vomiting is induced. It is not necessary that the stomach be emptied; it suffices if but a small quantity of mucus be injected; the muscles of the stomach and abdomen must have contracted. The explanation of the mechanism is that the reflex act of vomiting requires so intense an activity of the vagus that the less powerful reflex act of singultus is thereby interrupted.

For Chronic Bronchitis and Emphysema.—

℞.—Ammon. carbonat. . . . . gr. iv.
Tinct. scillæ . . . . . ♏xx.
Spt. ætheris . . . . .
Tinct. nucis vomicæ . . . ♏x.
Infus. serpentariæ . . . ad ʒj.—M.

S.—Two tablespoonfuls every six hours.

Practitioner, l, 3.

The Medical News.

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SATURDAY, APRIL 15, 1893.

THE "SPITTING" HABIT.

IT is time that the common and disgusting practice of indiscriminate spitting in public places and conveyances should be checked, not only because it is uncleanly, but particularly on account of the dangers that lurk in this form of uncleanliness. The sputum of tuberculous persons, when in its dried state, is a common means of conveying the specific germs of tuberculosis. Under the prevailing practice, the dust-laden air of assembling-places and public conveyances contains particles of infectious matter which constitute a real danger, especially to those who have a predisposition to tuberculous disease.

It is futile to attempt to limit the contagiousness of tuberculosis if people will persist in the most open and reckless manner in setting at defiance the established and simple rules of prophylaxis. DR. PRUDDEN has very clearly stated the case when he says: "If the vile and increasing practice of well-nigh indiscriminate spitting goes on unchecked in nearly all assembling-places and public conveyances; if the misguided women who trail their skirts through the unspeakable and infectious filth of the street are to be admitted uncleansed into houses and churches and theaters; if theaters and court-rooms and school-houses and cars are to remain the filthy lurking-places of contagia which their ill ventilation and their mostly ignorant and careless so-called cleaning necessarily entail; if in sleeping-cars and hotel bedrooms the well are to follow consumptives in their occupancy, without warning, or even the poor show of official disinfection; if in ill-ventilated and ill-cared-for dwellings the well must breathe again and again the dust-borne seeds of tuberculosis; if no persistent warning is to be given to the ignorant of the dangers which lurk in uncleanliness —then our task will be complex as well as difficult in limiting the contagiousness of tuberculosis."

Everyone is intensely interested in this subject. Pulmonary tuberculosis is too prevalent and fatal a disease to allow well-known means of prevention to be ignored without earnest and emphatic protest. Self-interest and a proper regard for the welfare of others, when once aroused, should be equal to the task of sweeping this offensive and dangerous practice out of existence. Did the conscious victim of this disease reflect for a moment upon the untoward consequences of his pernicious habit, he would, from motives of humanity, avoid an act that tends to add to human suffering.

Ignorance of the ways in which preventable diseases are spread is a primary cause of neglect to use needful precautions. In educating the masses in the knowledge of the practice of preventive medicine, the medical profession has a responsible duty to perform. The fact that pulmonary tuberculosis is contagious must be impressed upon the public mind. The idea that the disease is hereditary and hopelessly beyond limitation has taken deep root, and consequently measures of prophylaxis are greatly neglected. Expectation of cholera causes a panic to spread from shore to shore, and the most extraordinary preparations are made to prevent it; but tuberculosis stalks through the land slaying its victims in numbers only faintly approached by the deaths resulting from the severest outbreak of cholera, without exciting popular comment or coöperation in efforts to limit the prevalence of the disease in any degree commensurate with the gravity of the subject.

Legislators ignore the plea for dairy-farm inspection intended to eradicate tuberculosis from among herds of milch-cows, and other attempts to lessen the ravages of the disease meet with like indifference. Ignorance and want of appreciation of the teaching of sanitary law are mainly responsible for this reckless indifference. "Persistent warning

must be given to those ignorant of the dangers that lurk in uncleanliness." Popular sentiment must be created to assist the efforts of the few zealous philanthropists who are laboring earnestly for the adoption of measures known to be effective in restricting preventable disease.

A distinguished English author once reproached Americans for tolerating the unseemly habit of indiscriminate spitting. It may be mortifying to our pride to have our peculiar weaknesses exposed, but there is a serious side to this subject, hitherto unnoticed, which cannot be too frequently exposed to view. "Unrefined and vulgar" is a mild criticism of an act which modern science teaches us may be the means of spreading broadcast the seeds of fatal disease.

THE DYSURIA OF SENILITY.

AMONG the disabilities that senility brings with it is an annoying frequency and difficulty of micturition, a subject that receives intelligent consideration in a recent article by ASSMUTH (*St. Petersburger medicinische Wochenschrift*, xviii, 9, p. 79). Most commonly the disturbance is ascribed to obstructive enlargement of the prostate gland—in many instances, however, without actual warrant. Increase in the size of the prostate gland is not a constant accompaniment of advanced life; as a matter of fact, atrophy may not uncommonly be detected. On the other hand, the prostate gland may be materially enlarged, with entire absence of derangement of micturition.

In some cases the prominent feature of the dysuria of the aged is an imperative desire to urinate at short intervals, the stream of urine retaining its force and velocity but for the moment, while its continuity is sometimes interrupted and a few drops usually flow after the act has apparently been completed. In other cases the frequency of micturition is even greater during the night than during the day; while in still other cases the conditions may be reversed. In all, however, the urine may be clear and otherwise normal. Though the frequency of micturition be increased, but a small amount of urine is, as a rule, evacuated at a time. When, however, the increased frequency has been maintained for a considerable time there is sometimes actual polyuria.

In a case presenting the symptoms detailed, the question will at once arise as to whether or not the bladder is completely emptied at each micturition. The answer will be gotten by practising catheterization on several occasions immediately after the bladder has been *spontaneously* evacuated. If the presence of residual urine or of a foreign body can be excluded, a diagnosis of the dysuria of senility may be safely ventured.

One cannot rely upon digital examination *per rectum* to determine whether or not the prostate gland offers any obstruction to the outflow of urine. For this purpose it is necessary to make an examination of the urethra by means of the sound. As already indicated, increased size of the prostate is not a necessary accompaniment of the dysuria of old persons, and retention of urine may or may not be present.

Under normal conditions, when the intra-vesical pressure has reached a certain degree, reflex contractions of the muscular coat of the bladder take place in an effort to expel the contents of the organ; the internal sphincter is relaxed, and a few drops of urine escape into the prostatic urethra. As the pressure increases, the external sphincter is irritated, voluntary relaxation is permitted, and the urine escapes.

Now, it has been found that in old persons, in consequence of disease of the vessels, the muscular structure of the bladder sometimes undergoes fibroid degeneration. The resistance of the internal sphincter is diminished and the desire to empty the bladder is induced before the intra-vesical pressure has reached at all a considerable degree; while the repetition of the process is followed by a diminution in the retentive capacity of the bladder. A deficiency of propulsive power, from weakness of the muscular coat, is responsible for the slowing and interruption of the stream. Of course, if hyperplasia of the prostate coexist, the difficulty is aggravated: a portion of urine is likely to be always retained, with a tendency to undergo decomposition. In cases of this kind the recumbent posture, by inducing venous hyperemia in the enlarged gland, will cause increased frequency of micturition, in contrast with cases of cystitis and of calculus, in which recumbency brings relief. In other cases the frequency of micturition is the greater by day.

In the way of treatment, not much is to be accomplished. The indications are to render the urine bland, to keep the rectum empty, to sustain the general condition; if there be retention of urine, the catheter will be required; if decomposition

occur, irrigation will become necessary; if the prostate cause obstruction, dilatation should be cautiously practised.

EDITORIAL COMMENTS.

The Lancet's Investigation of the Sanitary Condition of Chicago, as cabled to American newspapers, is in essential agreement with the report in THE NEWS of last week. The lake water, as delivered from the four-mile tunnel, is found to be good, "comparing very favorably" with that supplied to London. But the actual drinking-water is often bad owing to impure ice. With the necessary boiling and filtering, and scrupulous care as to contamination by ice, little danger is to be feared from the water. The condition of the Chicago River is pronounced as bad as bad can be, but it might have been added that it is no worse than that of the Thames at and below London. But, of course, London does not drink the Thames water, whilst Chicago is at least in danger of drinking the Chicago River water—much diluted. The remarkably low death-rate of Chicago, pointed out by THE NEWS, is proof that the danger is not extreme, and that so far the pollution does not reach the four-mile intake. It is a pity that the reversal of the river current could not have been made permanent and complete before the Fair. The authorities must use every possible exertion to lessen the danger of sewage-contamination, and to keep the sewer and river outflow from the lake.

Questions arise as to whether the ice used in Chicago is exceptionally impure, as compared with that of other cities, or whether the local supply is partly good and partly bad; careful attention should be given these points. People will demand water cooled by ice, and the devices for effecting this without placing the ice in the water are to be advised.

The Conference of State Boards of Health, held in New York last week, grappled with the sanitary problems presented by the United States, especially in view of the possible coming epidemic of cholera. The spirit of the meeting showed a general belief that we shall have the disease among us, and that all arrangements must be made to prevent or overcome it. Surgeon-General Wyman reported the quarantine service along the Gulf and Atlantic coasts to be uniformly good. After much discussion the proposition to place a portion of the inspection service between State lines under the United States Marine-Hospital Service failed of adoption, though there was division of opinion among the members upon this point. In case the epidemic appears it was recommended that the railroads should furnish separate cars for the use of the sick or "suspects," and suitable accommodations for them at places *en route* designated by the State Board of Health. The details of the medical inspection of trains, the disinfection of baggage, etc., were also considered. Delegates were, perhaps, too prone to be over-confident as to the sanitary conditions and the mechanisms of prophylaxis and care, as regards their own States or cities, but they probably believed that too great fear in such matters is quite as bad as too great confidence.

Trained Attendants.—The trained nurse is to be supplemented by the trained attendant. The Massachusetts Emergency and Hygienic Association has just prepared a class of young women for a new occupation, that of trained attendants for convalescents, chronic invalids, elderly persons, and little children. The trained nurse is often too expensive a luxury to be kept long. The trained attendant, who has been instructed by competent trained nurses, is prepared to take the place of the nurse. She has been taught how to ventilate the rooms, make beds, bathe the patient, serve and prepare attractive food, etc. The young women admitted to the Boston classes must be at least twenty years of age, and be possessed of good antecedents. The course of thirty lessons, for which three dollars is paid, is followed by an examination which, if creditably passed, entitles the pupil to a diploma.

An Appeal to the Pity of Abstractors.—For the out-and-out thief we have no word of reproof—at least none that will reach his conscience or his custom. Every week we are amused and provoked to see abstracts, epitomizations, and lengthy extracts of articles printed in THE NEWS appearing without a hint of credit in the journals of "our esteemed contemporaries." This is quite bad enough, but when every other week the stolen goods are returned to the man who never owned them it is just a bit too much! When abstractor No. II quotes abstractor No. I why should No. II leave the original journal entirely out of the count, and give all the credit to abstractor No. I? We think the little boy who climbed the tree and got the apple should at least have the core. But we suppose that, as usual, the big boy will successfully prove that "there hain't agoin' to be no core."

History of Medical Education of Women.—In the *Fortnightly Review*, March, 1893, Mrs. E. Garrett Anderson gives a brief history of the movement for the admission of women to the medical profession. It appears to be written without a particle of open or concealed grudge against the profession which so long and unjustly opposed the movement, and this is all the more commendable, since Mrs. Anderson could say, *magna pars fui.* It is very gratifying to notice that to our own country is given the honor of inaugurating the movement and of pushing the reform to fruition. Miss Elizabeth Blackwell, in the face of many difficulties, succeeded in obtaining the degree of M.D. in 1849, from the University of Geneva, U. S. A. She then went to London, and there also led the way in opening to women the medical profession.

"Unconscious Memory?"—In the *North American Practitioner* for January, 1893, Dr. W. H. Smith, of Shell Rock, Iowa, has an article of which a page is taken (without quotation marks or hint of credit) from an editorial in THE MEDICAL NEWS of November 26, 1892, on Journalopathy. We had become so habituated to this sort of thing that we "smiled and excused." But now comes Dr. J. Lucius Gray, of La Porte, Ind., and in the March number of the *Practitioner*, shows that Dr. Smith "unconsciously quoted" almost all of the balance of his article from a previous essay of Dr. Gray. The "deadly parallel column" evidently had no terrors for

Dr. Smith—who, alas! signs himself a "Fellow of the American Academy of Medicine," etc.

The Recent Outbreak of Smallpox at Leicester, England, has supplied some facts which the anti-vaccinationists will find it difficult to explain away. Ten children who died had not been vaccinated, while among the vaccinated children there were no deaths. The report of the medical officer of the town is even more significant than the deaths of the ten unvaccinated children and the immunity of all who were effectively protected. The staff of the Fever Hospital was made up of twenty-eight persons. "Of these twenty-eight, twenty-two were protected," Dr. Priestley says in his report, "including eight whom I re-vaccinated, while the remaining six had only been vaccinated in childhood, and so were not 'efficiently' protected. Of these six 'inefficiently' protected officials—all of whom refused re-vaccination, which I offered them—four have since contracted smallpox and one has died; so that two only of the staff now remain 'inefficiently' protected, and it will be interesting to note their future histories."

The Time Allowed Speakers and Essayists before the meetings of the American Medical Association, according to the proposal of the Committee on Constitution, etc., is, for the reading of papers, twenty minutes. In the discussion no speaker shall occupy more than fifteen minutes without unanimous consent. The absolute forbidding readers a longer time than twenty minutes is an excellent rule, but we think the time-limit in discussion should have been made ten minutes, and no vote, however "unanimous," should give a longer time. No one will be guilty of the seeming discourtesy of a negative vote on a question of allowing more time, and if it be given one, others will ask or get it, and thus, as a result, waste of time, long sessions, and unlimited boredom are permitted.

"Original Communications" in the Canadian Practitioner.—We would suggest to "our esteemed contemporary," that there is a limit to human endurance and patience. In the March number of the *Practitioner* there are six articles indexed and classified as "Original Communications," but every one is taken bodily from other journals. Two of them are credited to the journals from which they are taken; of the four not credited, three are from THE NEWS, viz.: the article by Dr. Abbott (Sept. 10, 1892), that by Dr. Hartshorne (same issue), and that by Dr. Bartholow (Feb. 4, 1893). Two plain Anglo-Saxon monosyllables are the only true (but we suppose improper) means of designating such editorial doings.

An Echo from the Past.—From Tennessee there comes a sad story, the confession of a crime committed twenty-eight years ago by a physician who, in his over-scientific zeal, sought to remove the body of a dead patient from the grave in order to make a post-mortem examination. The husband of the dead lady came upon the doctor at his work, struck him, but was himself finally accidentally or in self-defence killed. The grave was then made to hold the husband's body, and at the doctor's death, twenty-eight years after, the confession is now made public. The physician adopted and raised his victim's children.

Decrease of Crime in England.—There is taking place in England a steady, continuous decrease in prison population and crime that is most gratifying. In 1876–77 the average number in local prisons was 20,361, while in 1891–92 the number was 12,663. In 1869 there were 2006 sentences of penal servitude; in 1891, but 751. The number of persons known to the police as belonging to the criminal classes in 1867–68 was 87,668; in 1891 the number was 51,095. Felonies in London, in 1890, were 2053 fewer than in 1889. Similar results are reported in Liverpool.

"Gold Cures" in Colorado.—Two bills are now on the legislative calendar of Colorado for establishing, at the expense of the State, "gold-cure" institutions for drunkenness. One, of course, advocates the Keeley method, and the other an imitation. Each is trying to convince the astute legislators that it is the better; the judgment of the legislators is concerned only with this question, and not at all with any doubt as to the excellence of any such method. It is thought the Governor's veto is all that will stand in the way of the State's disgrace.

The Hotel Physicians Again.—The *Cincinnati Lancet-Clinic* says that a New York hotel physician charged a Cincinnati traveller twenty-five dollars a visit for medical services. This is quite an advance in price from the seven-dollar fee confessed to by the *Medical Record*. Would it not be economy for travellers hereafter visiting the metropolis to take with them the family physician?

Statistics of English Medical Profession.—There are in England, Scotland, and Ireland 30,590 practitioners, 1513 having registered in 1892, the largest number entering in any one year since statistics have been available. The total number of medical students registering in 1892 was 1671—a smaller number than that of previous years.

A Dispensary Conducted by Women has been in operation for the past year in Baltimore and has proved successful in many ways. Much of the success has doubtless been due to the praiseworthy feature of evening service. The dispensary is open three evenings and two afternoons of the week.

Suppression of Prostitution by law is to be attempted in Arkansas, a bill providing heavy penalties for the inmates of houses and for negligent police-officers having been passed by the Senate. Experience has shown that such attempts are worse than useless.

Winter Cholera in Russia.—Our consul at St. Petersburg reports to this Government the statistics of the cases and deaths in Russia during the winter. It appears that cholera has been general throughout the coldest weather, and has shown a very high rate of mortality.

An Object-lesson.—It is related that a member of the British Parliament who was opposed to vaccination succumbed to an attack of smallpox.

"Dr. Booth," the New York bogus-diploma merchant, has been sentenced to six months in the penitentiary.

REVIEWS.

A Treatise on Nervous and Mental Diseases, for Students and Practitioners of Medicine. By Landon Carter Gray, M.D., Professor of Nervous and Mental Diseases in the New York Polyclinic, etc. With 168 illustrations. Philadelphia: Lea Brothers & Co., 1893.

We have fallen upon an area of unusual activity in the production of neurologic treatises, several of which by American authors have appeared during the last year or two, and among these is the present excellent work by the distinguished New York neurologist, Dr. L. C. Gray, a highly successful effort to condense into a volume of reasonable size a practical knowledge of nervous and mental diseases. It is a book which the neurologist can consult with interest and advantage, but one which will be found to be particularly useful to the student and general practitioner. Full but choice use has been made of the neurologic material which has been scattered broadcast in journals, monographs, and transactions in the chief modern languages, during the last two decades; and to most of the chapters bibliographic lists have been added, which will be found of value to readers who may desire to go to the original sources of information, and which also prove the industry and wide reading of the author. A necessary anatomic introduction is condensed into one chapter of nearly seventy pages; then follows a chapter of about twenty pages in which facts necessary to be known by the practitioner about electricity are well presented; after which the book is divided into two parts, one, of about 450 pages, devoted to nervous diseases, and another, of 94 pages, to mental diseases. Under the head of Nervous Diseases little that is necessary to be known has been omitted; under Mental Diseases the most important forms of insanity are briefly treated, and chapters on the Pathology of Insanity and on Idiocy are given. No classification of insanity is used, the author believing, with other good authorities, that neither a classification nor a general definition of insanity are necessary to a working-knowledge of the subject.

The Anatomical Introduction is particularly good, both in its illustrations and in the clearness of the descriptive text. Dr. Gray has the high art of presenting elementary facts, and matter, old or new, in a lucid and attractive, even if sometimes in a dogmatic way. Many of the illustrations in this and other portions of the book are original, and those which are not, have been taken from the best sources—as from Sachs, of Breslau; Stilling, Edinger, Dalton, Fleichsig, Gowers, Duret, and Hermann. Some excellent photographs of diseases and conditions, which lend themselves to this method of representation, are scattered throughout the book, as of poliomyelitis, progressive muscular atrophy, pseudo-hypertrophic paralysis, the cerebral palsies of childhood, Huntington's chorea, athetosis, lead-paralysis, spasm of the trapezius, akromegalia, and types of insanity such as melancholia, paretic dementia, and terminal dementia. The large space which throughout the work has been given to the discussion of symptomatology and treatment will serve to make it popular, especially with busy workers.

The chapter on Neurasthenia is one of the best in the book and in the language, a fact which will commend it to many practitioners. Under the head of Nervous Diseases of Probably Microbic Origin, the author considers tetanus, tetany, hydrophobia, and diphtheric paralysis, while chorea is still classed under the neuroses. The chapter on Certain Nervous Symptoms Common to Different Diseases will be appreciated by those who, from time to time, wish enlightenment on some cases of vertigo, headache, insomnia, or coma, of whose pathology they have no clear trace. The more recently described diseases or symptom-complexes, such as paramyoclonus, astasia-abasia, myxedema, and akromegalia, receive attention.

Syringomyelia is well discussed in a chapter which carefully considers its pathology and diagnosis, but contains the statement that in not a single instance has the author been able to find that the diagnosis has been made before death. We have certainly seen it made before death, and verified by autopsies in several cases, and the symptom-picture of the common form of this affection, although somewhat irregular, is so definite that it can be almost as readily recognized as most of the well-known forms of sclerosis. A chapter is given on Railway Injuries and Other Traumatic Diseases of Medico-legal Interest; and under different mental diseases, and not a few of the nervous affections, the medico-legal bearings of the subjects are discussed, Dr. Gray's experience in medical jurisprudence thoroughly qualifying him for this part of his work.

Under Mental Diseases, some of the best articles are those on Morbid Fears and Impulses, Melancholia, and Paranoia. The last is especially good, and shows a thorough acquaintance with the history and literature of the affection, and also a knowledge of the subject from large experience. The chapter on Paretic Dementia is sufficient, although short as compared with the space devoted to this important affection in some works devoted to insanity. The style in which the book is written is worthy of passing notice. It has, to a certain extent, a personal flavor, which, while it may sometimes expose the author to criticism, will on the whole commend the book to many readers. He does not hesitate in the first person to commend or condemn, to accept or reject, or to make energetic comments.

The book is produced in the best form of publishers who stand first for the excellence of their work; print and paper are both of the best.

Dr. Gray's book will long hold its place as a standard treatise on nervous and mental diseases.

The Anatomy and Surgical Treatment of Hernia. By Henry O. Marcy, A.M., M.D., LL.D., etc. With sixty-six full-page heliotype and lithographic plates, including eight colored plates from Bourgery, and thirty-seven illustrations in the text. 4to, pp. 421. New York: D. Appleton & Co.

This is a very large and handsome book. A great part of it is beyond the province of the reviewer, being made up of quotations, mainly from authors who have long since gone over to the majority, and whose writings have become classic. It is probable that to most of the present generation of readers they are scarcely

known even by name; and it is, therefore, well that they should thus be reintroduced, in something of their ancient stately dignity, among the handbooks and compends which form so large a proportion of the medical literature of our day. For not only have we here copious extracts from the text of these departed worthies, but reproductions, somewhat reduced, indeed, of their splendid illustrations; and these will be a revelation to eyes familiar with nothing but modern text-books and treatises. Yet, looking at the folios of Cooper and Scarpa, now before us, we cannot but regret that in the process-copy so much of the fine quality of the work of Heath and Adam—two of the best exponents of the now lost art of steel-engraving—is necessarily wanting. Six of the plates given by Dr. Marcy are very successful reproductions of colored lithographic prints from Bourgery. Three plain lithographs, from those drawn by Bagg in Gay's work, are fairly good; one, from Cruveilhier, has suffered much in the copying. All the original illustrations, three lithographic plates, and a number of woodcuts, are very inferior.

We are unable to discover that Dr. Marcy has given anything new in regard to the anatomy of hernia or improved upon previously existing descriptions. Of the properitoneal form, which within a few years past has been the subject of able discussion both in this country and abroad, he makes no mention. This is the more to be regretted, because there is reason to think that such cases may sometimes occur without being recognized, to the disaster of the patient and the discredit of the surgeon. The omission is the more surprising as a whole chapter is devoted to the far simpler and less important variety in which the ovary is the extruded viscus.

In the chapter on diaphragmatic hernia nothing is said of Postempski's brilliant and successful operation for its relief, access being had from above through an opening into the pleural cavity. At the end of this chapter there is the rather odd interpolation of a paragraph on internal intestinal obstruction, and then the following oracular opinion:

"There is but one rule. When the obstruction to the intestine endangers life an exploratory operation must be undertaken in order to determine the conditions accurately, and, if possible, restore the parts to their normal state and function."

Exactly; but in practice the difficulty lies in deciding whether the patient's life is in danger and this cannot be averted except by an operation. It is just this question that perplexes the young practitioner, and often, very often, his older brethren.

The gist of the material contributed by Dr. Marcy seems to be a repetition of his arguments for the use of the buried tendon-suture, which he has for twenty years past advocated in articles published in various medical journals.

The needle figured by him, and spoken of as a modification of Hagedorn's, is merely that known as Baker Brown's, but with a more abrupt curve toward the end; it has nothing in common with Hagedorn's, which is flat, and its essential feature is the straight cutting-edge, like that of a gorget, at its point.

Dr. Marcy reviews somewhat hastily the various methods employed from the earliest times for the radical cure of hernia. He makes no mention of Kocher's, which is certainly a very brilliant one as we have seen it performed, and which seems to promise great efficiency when it is practicable. For, like many of the other procedures recently brought forward, it requires that the sac should be completely isolable; the difficulty of doing this, although very little dwelt upon by authors, has in our own experience been a not infrequent cause of embarrassment. As to Dr. Marcy's own operation, we are not sure that we rightly understand his description; but it seems to be a very complicated way of effecting the object aimed at. This object he states to be the reconstruction and narrowing of the canal, and the restoration of its obliquity (p. 391). And after describing the procedure, he says: "The spermatic cord is now enclosed within a canal restored to its normal size, length, and obliquity." Our own idea, from some little practical experience, is that the prime object should be the obliteration of the hernial sac, and of the pouch of peritoneum which represents its initial stage. The cord in many cases need not be considered at all, except by way of avoidance.

Dr. Marcy's use of English is very peculiar. "Factorage" and "interfolding" are favorite words with him. In the explanation of Plate XI, on page 36, we note "the coxal bone" and "birth of the descending branch of the pubis." "Pubian" and "infra-pubian" are not legitimate. We are told that the staphylococcus pyogenes albus is "so universal a habitat of the skin," etc. (p. 112); and that certain precautions are "generally accepted as advisory."

With proper names he deals very unkindly. "Hagedorn" is throughout spelled "Hagerdorn." We read of "Paulus Aeginatus," "Dessault," "Ammusal," "Pomcet," and "Golobin." Mr. A. W. M. Robson becomes Dr. A. W. Robson; and in a foot-note we find the learned author of the Icones Herniarum referred to as "Camper Peter," his editor as "Sommerung," and the citation "Plate Sexta." On page 160, in a foot-note, we find a reference to "Med. Cor. Bl. d. Würtlembärtzl. Ver. Stuttgart, 1862."

Such errors ought not to occur in a small and cheaply gotten-up book; in a large and pretentious volume like the one now under consideration, they become serious blemishes.

Commercially speaking, we may highly commend this book; but we cannot regard its title-page as an accurate description of its contents. There is an ancient adage: "Who drives fat cattle should himself be fat."

HUMAN ANATOMY: A COMPLETE AND SYSTEMATIC TREATISE BY VARIOUS AUTHORS, INCLUDING A SPECIAL SECTION ON SURGICAL AND TOPOGRAPHICAL ANATOMY. Edited by HENRY MORRIS, M.A. and M.B. Lond., etc. Illustrated by 791 woodcuts, 214 of which are printed in colors from drawings made expressly for this work by special artists. Pp. 1286. Philadelphia: P. Blakiston, Son and Co., 1893.

IN the preface to this work, the editor states that it "is designed for the use of students, and aims at being a complete and systematic description of every part and organ of the body, so far as it is studied in the dissecting-room."

In its preparation, the various portions of the subject have been dealt with by authors known to have devoted special attention to them. Such collaboration has been found very successful in works in other departments of medical science; but we are aware of only two previous instances of its employment in treatises on anatomy. One of these, Todd's *Cyclopedia of Anatomy and Physiology*, is familiar to all the English-speaking profession; the other, originally published in Germany under the editorship of Bischoff, is best known through the French translation by A. J. L. Jourdan as the *Encyclopèdie Anatomique*. The result in the present case is eminently satisfactory.

The section on Osteology, by Mr. J. Bland Sutton, is of great interest, as might be expected by anyone acquainted with his published papers. This interest depends not merely upon a clear description of each bone, but upon the account given of its development, and of its condition at different periods of life. We note here, as elsewhere throughout the book, the impress of that modern thought which has made anatomy a science in the true and modern sense of the word.

The editor himself furnishes an admirable section on the Articulations. The Muscular System is described by Mr. Davies-Colley; the arrangement of the subject is very good, but the author seems to have a curious fancy for calling the muscles "sheets"—a term which we think hardly applicable, for instance, to the gluteus maximus, or to the different portions of the quadriceps femoris. Appended to this section is an alphabetical list, by Mr. Sutton, of abnormal muscles.

Mr. W. J. Walsham gives a very full account of the Arteries, Veins, and Lymphatics. The heart is elsewhere described, along with the other thoracic viscera.

The section on the Nervous System, by Dr. H. St. John Brooks, strikes us as especially good. The anatomy of the brain is a subject very difficult for the teacher to set forth, and exceedingly difficult for the student either to understand or to remember. To the beginner, all seems to be chaos, and there are no clues to the relevancy of the names of the parts. Dr. Brooks has certainly placed the matter in as clear a light as words can do it, greatly aided by excellent illustrations.

Of the organs of special sense, the eye has been assigned to Mr. R. Marcus Gunn; while the ear, tongue, and nose have been described by Mr. Arthur Hensman, who has written also on the thorax, including the organs of voice, respiration, and circulation, as well as the digestive organs above the diaphragm.

The article on the Abdominal Viscera, although in the table of contents the whole section including it is credited to Mr. Hensman, is in its heading stated to be by Mr. Treves. It is, of course, excellent, the portion relating to the arrangement of the peritoneum especially.

The Urinary and Reproductive Organs, and the Mammæ, form the subject of a very practical section by Mr. William Anderson.

The final contribution, by Mr. Jacobson, on Surgical and Topographical Anatomy, seems to us the least satisfactory portion of the volume. It is a terse enumeration of isolated facts, somewhat vaguely stated, and with scarcely any distinct reference to their bearing on surgical procedures. An experienced dissector and operator might find them useful for refreshing his memory, but as guides to the student they have but little value.

A book on Descriptive Anatomy deals with the most unchanging of all the facts of medical science. It is probable that, if the structure of the prehistoric man could be investigated, it would be found to be as accurately set forth in the volume before us as is that of his nineteenth-century descendant. Hence, in a work of this kind we are to look, not for novelty in actual facts, but for clearness and precision of statement, for abundance and variety of illustration, and for adaptation to the needs of the modern physician and surgeon. These qualities, we think, can be justly claimed for the book of which we have now given a notice rendered all too brief by the limited space available. As a whole, it is very highly to be commended. The typography is clear and remarkably free from errors. The illustrations are abundant and, in general, extremely good. A copious index adds very much to the comfort and convenience of those who would consult it.

A Treatise on Diseases of the Rectum, Anus, and Sigmoid Flexure. By Joseph M. Mathews, M.D., Professor of Principles and Practice of Surgery, and Clinical Lecturer on Diseases of the Rectum, Kentucky School of Medicine, etc. With six chromolithographs and numerous illustrations. New York: D. Appleton & Co., 1892.

The author states in the preface that this work records his individual experience of fifteen years as a rectal specialist, and is written in answer to the demands of his students and friends.

The volume contains about 550 pages and numerous illustrations. It is divided into twenty-four chapters. Several chapters, new to books on this special subject, have been introduced. Among these may be mentioned: Diseases in the Sigmoid Flexure; the Hysterical or Nervous Rectum; Anatomy of the Rectum in Relation to the Reflexes; Antiseptics in Rectal Surgery; etc.

The term "Sigmoid Flexure" has been placed in the title of the book, because the author is convinced of its great importance as a seat of disease, and for the reason that he is aware that the subject has not received the attention at the hands of the profession which it deserves.

Chapter I presents the rules to be observed in examination, diagnosis of rectal diseases, etc., and contains a strong array of reasons for making rectal examinations of applicants for life-insurance. In this chapter the use of the rectal bougie for the purpose of aiding in diagnosis is mentioned only for the purpose of condemning its employment.

The same reasons advanced to condemn the use of the bougie for diagnostic purposes, we should think, would apply to the method of examining the lower bowel by the introduction of the entire hand. Yet Dr. Mathews condemns the former, and under certain circumstances advocates the latter.

In Chapter III the author dwells at length upon the subject of constipation, and naturally so, for this trouble is associated with numerous diseases of the rectum. Herein is mentioned the case of a woman who averaged four months' time beween the actions of her bowels. No

wonder that Dr. Wm. Goodell defines woman as "a constipated biped."

On page 72, of the chapter under consideration, the types make the author state: "Each application requires about three drams (forty-five grains) of boric acid." No doubt the word *grams* was intended.

Chapters V, VI, and VII deal with the subject of hemorrhoids. The author's favorite method for the operative cure of internal hemorrhoids is by the use of the ligature. There are many surgeons to dispute the points made by Dr. Mathews in this statement (page 158): "I do not think it can be gainsaid but that the ligature is the easiest of execution, safest in its results, accompanied with less pain, and the convalescence quicker than by any other method of treating internal hemorrhoids."

In Chapters VIII and IX fistula-in-ano is considered. Therein is detailed the author's method of treating this lesion by means of an instrument which he names a "fistulatome." It is described in the following words: "Taking the ordinary exploring probe, it is inserted into the external orifice of the fistula to determine, if possible, that only one sinus exists. Being satisfied of this fact, a long, slender laminaria tent is taken, and pushed gently into the fistulous sinus to the fullest extent it will go. This is allowed to remain for several hours, keeping the patient under observation during the interim, at the end of which time it is withdrawn. This procedure causes but little if any pain. The laminaria tent is preferable to a sponge, for the reason that it is easier of introduction and furnishes its own moisture, which assists in its withdrawal; after this dilatation a small urethrotome is taken, having a very small point; closing the instrument tightly, it is pushed gently into the sinus as far as it will go, and then by the aid of the screw-attachment the sinus is dilated. When this is done, the turning of the screw at the side of the instrument will cause the concealed knife to protrude at the distal end according to the measurement desired," etc.

Want of space prevents further mention in detail of this valuable book of Dr. Mathews. The work is extremely practical; the treatments outlined are sound and are based upon ample experience, which testifies to their efficacy; and the subject-matter, in the main, is presented in a clear, concise and original manner. We can safely commend the treatise to our readers.

DIE MICROÖRGANISMEN DER MUND-HÖHLE. Von W. D. MILLER, Doc. Med. et Phil., Prof. am Zahnärztlichen Institut der Universität Berlin. Mit 134 Abbildungen im Texte und 18 Photogrammen. Zweite umgearbeitete und stark erweiterte Auflage. 8vo, pp. 448. Leipzig: Georg Thieme, 1892.

MILLER'S book, "The Microörganisms of the Mouth-cavity, and the Local and General Diseases that are Caused by Them," appeared in its first edition in 1889. The second edition, now before us, is an improvement upon the first in several respects, the most important of these being the chapter of 64 pages upon the aseptic and antiseptic methods of dentistry, including prophylaxis against caries of the teeth; treatment of caries of the teeth by means of germicides; use of antiseptics in the treatment of carious cavities; the disinfection of dental instruments; the methods of sterilization of instruments and other articles used in dentistry; the antiseptic action of materials used in filling teeth; with a list of the different disinfectants and antiseptics employed in this work as determined experimentally.

The fermentations that go on in the mouth-cavity as a result of bacterial growth are treated at some length, and are of special value in explaining the causes that underlie the destruction of the solid portions of the teeth.

Another portion of the book is devoted to the methods of examining the mouth-cavity bacteriologically.

There is also a very good description not only of the morphology of those organisms present in the mouth that cannot be cultivated by the ordinary means, but likewise of those that have been obtained in pure culture. The book is well illustrated, the illustrations being from sections of normal and diseased teeth. It can be recommended to all those who are interested in the surgery of the oral cavity.

FERMENTATION, INFECTION, AND IMMUNITY. A New Theory of these Processes which Unifies their Primary Causation and Places the Explanation of their Phenomena in Chemistry, Biology, and the Dynamics of Molecular Physics. By J. W. MCLAUGHLIN, M.D. 8vo, pp. 240. Austin, Texas: Eugene Von Boeckmann, 1892.

ANYONE who opens this book prepared to be amused by the crude speculations of an uninformed vagarist, will quickly abandon his pre-judgment and recognize that he has to seriously consider the theorems of a clear-headed and instructed thinker. Nevertheless, the author not only makes inaccurate statements, such as the definition of "force" as a "mode of motion," but he has also committed the grave error that too often retards progress—he allows speculation to outrun observation, and advances propositions that in the present state of knowledge can neither be accepted nor denied. Such speculations are legitimate when they lead to experiment that verifies or disproves; they are legitimate when they serve to unify into coherent doctrine what has hitherto been a mass of detached fragmentary notes of facts; but in the book before us neither of these ends has been achieved. We are inclined to assent to the more than plausibility—to the probability of much that the author asserts, but facts will not justify more than an inclination. Much more observation will have to be accumulated before any satisfactory theory of the subject treated can be even tentatively advanced. With all this, the book is worth reading for its lucidity, its thoughtfulness, its suggestiveness. We would all be better physicians if we reasoned as broadly as does the author.

GONORRHEA AND URETHRITIS. By G. FRANK LYDSTON, M.D. (Physicians' Leisure Library.) Detroit, Mich.: George S. Davis, 1892.

THIS little book is one which is intended to be practical. The first impressions which are formed upon reading the portion of it in which the writer sets forth his views on the evolution of gonorrhea are that this intention is not likely to be fulfilled. It would perhaps be a difficult task to reconcile these ideas with the present teachings of bacte-

riology; but as the author, in his preface, refers to the exposition of them as an "indulgence in more or less speculative theorizing," the reader who may not happen to agree with him should not, on that account, form a prejudice against the book as a whole. Evidence of the practical trend of the work is gained as one's acquaintance with it grows. The clinical picture of the disease is good, and the accuracy with which its phenomena, and those of its complications, are described, shows the touch of one whose experience has been wide and whose observation of detail is careful.

The chapter on the treatment of acute urethritis is fairly up to the times, and contains some very good advice. In dealing with the treatment of the chronic form, proper emphasis is given to the necessity of ascertaining the exact locality and extent of the persistent inflammatory condition, but we do not think that amongst advanced authorities full support will be found for the statement that "for ordinary purposes the bulbous, flexible French bougies will be found to be all that is necessary for this purpose." To be sure, the endoscope is mentioned, and a cut of Leiter's urethroscope is given, but it does not seem that sufficient stress is laid upon the importance of employing them. Of course, men's experience will vary, and means that may prove successful in the hands of one, will, for reasons not always easy to ascertain, fail utterly in those of another, and for this we must always make due allowance.

CORRESPONDENCE.

THE SANITARY CONDITION OF BALTIMORE.

To the Editor of The Medical News,

Sir: Baltimore is reasonably well protected against invasion by cholera. In the first place, the sanitary outposts of the Marine-Hospital Service at the points of debarkation of possibly infected immigrants will doubtless very greatly reduce the danger of invasion. However, should cholera break out on a vessel during its passage across the ocean, the disease would receive its first check at the National quarantine station to be established in Chesapeake Bay. In the event of the disease escaping detection at that point, the city possesses another line of defence at the municipal quarantine station at the mouth of the Patapsco River, nine miles below the city. This station is being equipped with a steam disinfecting plant at a cost of $8000, and will doubtless prove a valuable auxiliary to the National quarantine station before mentioned. At the local quarantine station is a hospital with a capacity of seventy-five beds, with sufficient land to permit the erection of barracks and tents to any required extent. I may add that the quarantine physician has held his present office for twelve years, and is thoroughly qualified for the duties of his office.

But how is Baltimore prepared to cope with cholera should it be introduced? Here, in the first place, we must examine our sources of water-supply, and consider the chances of contamination. The supply of the city is derived from two sources, known as the old, or Jones Falls, and the new, or Gunpowder River supplies. The total daily consumption of the city is 45,000,000 gallons, and the total available supply 300,000,000 gallons.

The Jones Falls supply comes from a thickly populated region and is in grave danger of pollution, which is, however, minimized by a system of inspection almost certain to detect gross violations of sanitary laws. This danger is present to a less degree along the course of the Gunpowder River supply. There is a very rigid State law against the pollution of streams, but its enforcement has not been very active, perhaps because there were few flagrant violations of the law. In the majority of cases, offences against the Rivers Pollution Act are committed through ignorance or carelessness, and a request from State or local sanitary authorities for an abatement of the nuisance has been promptly complied with. In other cases the powers of the law have been invoked with good effect. Measures are contemplated to guard the water-supply still more efficiently than at present.

The health authorities seem fully awake to the importance of being prepared. A house-to-house inspection has been made, and nuisances are being abated. The streets are, however, in a very dirty condition. This is partly owing to the fact that many streets have been torn up to lay tracks for cable and trolley lines of railway, and partly to the prolonged frost and heavy snows of the winter. There is no doubt, however, that the system of street-cleaning is a vicious one, being under the dominion of local politicians. A change in the methods of the street-cleaning and City Commissioners' departments having charge of street-cleaning and paving is demanded by professional and public opinion, but the patronage in both departments seems to be too large for the politicians to yield without a struggle.

The Health department has asked for an appropriation of $111,000, which will probably be granted. The City Council has, in addition, made an appropriation of $45,000 for an Infectious Diseases Hospital, which is now awaiting the approval of the Mayor. The general public, represented by the Charity Organization Society and other public organizations; the medical profession, through the Medical and Chirurgical Faculty of the State; the public press, and the Health department joined forces in demanding the hospital for infectious diseases, and the City Council yielded to the universal demand. The only danger of failure to secure the hospital comes from a portion of the profession itself, which apparently does not approve the plans of the Health department. It is to be regretted that a difference of opinion concerning the plans of construction should jeopardize the entire work.

The greatest sanitary need of Baltimore at present is a comprehensive sewage system and the abolition of the abominable privy system, which contaminates the atmosphere and the soil. Here, also, one of the most powerful hindrances to progress is the disagreement as to what system of sewerage should be adopted. Much of this disagreement is due to the want of definite knowledge upon sanitary matters possessed by the majority of the profession and the public. It is assumed that a successful physician, a skilled surgeon, or an accomplished obstetrician necessarily commands all available sanitary knowledge, forgetting that modern hygiene is as truly a specialty as any of the other branches to which physicians pay special attention. In

a general way the cultivators of one medical specialty defer to the opinions of experts in another, but anyone considers himself competent to give an opinion *ex cathedra* upon grave and complex problems in hygiene, forgetting that the studies of the sanitarian are often in lines widely diverging from those of the physician, surgeon, or accoucheur.

The powers of the Health department are ample in the restriction of infectious diseases, but so far as the suppression of dangerous nuisances is concerned the laws are very defective.

A large contingent of the medical profession has repeatedly demanded that the sanitary inspectors of the Health department should all be physicians, and the demand seems a reasonable one. At present the majority are non-professional men, but it is only fair to admit that their duties are performed with as much intelligence, promptness, and tact as could be expected of physicians at the same salary.

There is a tendency among the profession and the public to regard all public officials with suspicion, to discredit their efforts, to doubt their integrity, and often to reflect upon their personal character. The Baltimore Health department has suffered in common with others from this unjust tendency, and has often for this reason been seriously hampered in its sanitary work. The present Health Commissioner is, however, an official of experience, having entered the sanitary service twenty-one years ago. He has served as vaccine physician, assistant commissioner, and for the last two years has been at the head of the department. He is thoroughly familiar with his duties and the requirements of the position. He seems to be also *en rapport* with the great mass of the profession and the public in the common effort to place and keep the city in first-class sanitary condition. Should this spirit of mutual help and trust be maintained, I think the citizens of Baltimore can look with equanimity upon any threatened or even actual invasion of their city by the East Indian terror.

GEORGE H. ROHÉ.

THE METRIC SYSTEM.

To the Editor of THE MEDICAL NEWS,

SIR: I believe the suggestion made by Dr. Eli H. Long: "Aids to the Adoption of the Metric System in Prescription-writing" (THE MEDICAL NEWS, March 25, 1893, p. 332), is one calculated to do much more harm than good in the rational adoption of the metric system. That the metric system is far superior to any other system of weights and measures is acknowledged by all scientific men.

The only way to secure its adoption, however, is for the instructors in medical schools to teach their students the doses of drugs in the metric system, and in the metric system *only*.

To use the metric system rationally we must think in the metric system, and banish as soon as possible all thoughts of grains and drams from our minds. For those who are used to the old system this can be accomplished in the following manner:

Do not try to make exact equivalents in the two systems, but try to substitute in your mind the following as standards for dosage:

Instead of gr.	$\frac{1}{100}$	use 0.001	gm.
"	$\frac{1}{100}$	" 0.0005	"
"	j	" 0.05	"
"	v	" 0.25	"
"	x	" 0.50	"
"	xv	" 1.00	"
"	℥j	" 5.00	c.c.

Of course, it is acknowledged that 0.25 gm. is nearer gr. iv than gr. v, and that 0.50 gm. is nearer gr. viii than gr. x, but the object is to dismiss the grains and English measures entirely from our minds and think in the metric system. Having once adopted the new standard of dosage, it is the easiest thing in the world to calculate the dose: a 5 per cent. solution gives 0.25 gm. to the dose of 5 c.c., or one teaspoonful; a 10 per cent. solution gives 0.50 gm. to the dose, and a 20 per cent. solution gives 1 gm. to the dose. For the milligrams and smaller fractional doses, the full amount of drug is easily calculated from the number of doses.

As to the sizes of the bottles, it will not take long to change them, if the metric system comes into considerable use.

In the attempt to bring about a reform there is really nothing ever gained by making a compromise. It generally makes things worse all around for a time, and puts off to a still later date the accomplishment of the wished-for reform.

Yours very truly,

DE LANCEY ROCHESTER, M.D.

BUFFALO, N. Y.

NEWS ITEMS.

The Pan-American Medical Congress. Section on Diseases of Children.—The organization of this Section is complete and the work of arranging a program is well advanced. Numerous valuable papers have been promised and the success of the meeting is assured. Physicians interested in diseases of children are cordially invited to attend these meetings, which give promise of great interest both to the specialist and general practitioner. Any American physician desiring to read a paper will please communicate at once with the Secretary, who will be pleased to furnish all needed information. Executive President, Dr. John M. Keating, Colorado Springs, Colorado; Secretaries, Dr. F. M. Crandall (English-speaking), No. 113 W. 95th Street, New York, N. Y.; Dr. Damaso Lainé (Spanish-speaking), Media, Pa.

Correction.—In consequence of a misapprehension it was stated in THE MEDICAL NEWS of last week that the bill providing for the appointment of a Medical Council and three State Boards of Medical Examiners had finally passed the Legislature, whereas, at the time, it had but passed the House of Representatives.

Sir Joseph Lister has been elected a foreign member of the French Academy of Sciences, in the place of the late Richard Owen.

Erb, of Heidelberg, has been proposed as the successor of Kahler, deceased, in the chair of Clinical Medicine at Vienna.

Siemerling, of Berlin, has been elected Professor of Psychiatry and Director of the Psychiatric Clinic at Tübingen.